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JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

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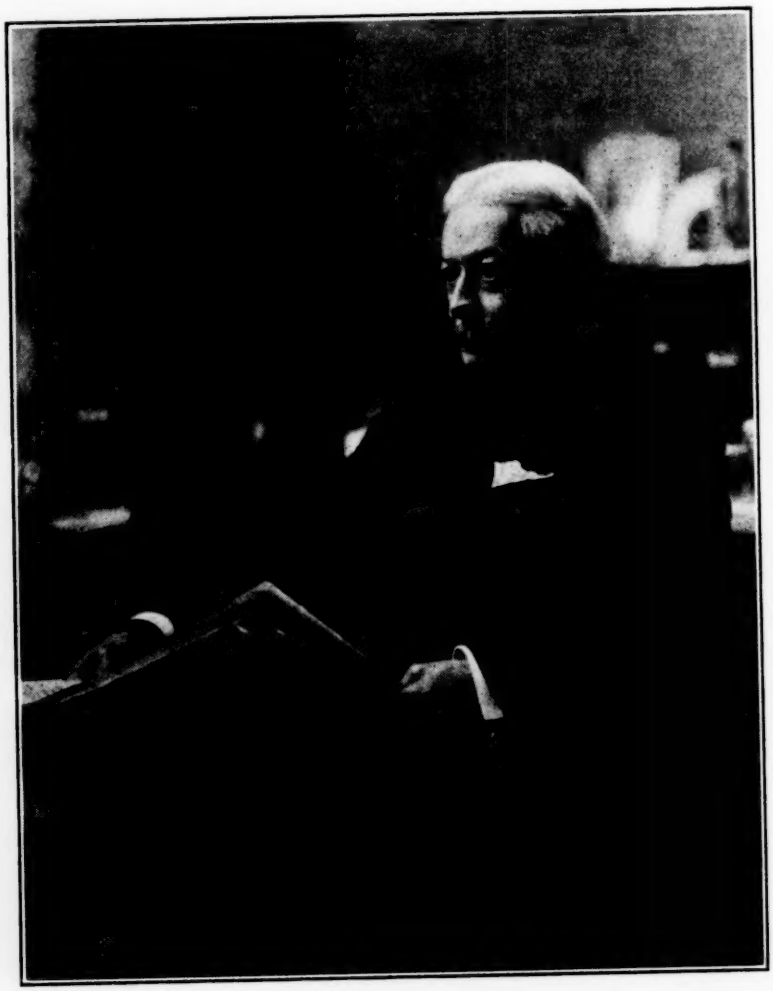

WILLIAM HULL WICKHAM.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XI AUGUST, 1922 No. 8

WILLIAM HULL WICKHAM.

William Hull Wickham is probably better known to the older generation of pharmacists than to the present, although his drug trade activities have covered a period of half a century down to the year of 1916. Mr. Wickham is a native Long Islander and dates his ancestry back to the famous English architect, William of Wykeham, who built the wonderful cathedral of Winchester. His father, Joseph P. Wickham, was a successful merchant and William Hull Wickham was educated at the Brooklyn Polytechnic and Princeton University, from which he graduated in June 1866, securing his M.A. degree three years later.

In October 1866 Mr. Wickham entered the employ of McKesson & Robbins, beginning at the bottom of the ladder. His polished manners coupled with ambition and hard work attracted early attention and made him a most successful salesman with the result of his being taken into partnership in 1870. Soon after, he took charge of the newly established manufacturing department and was primarily responsible for the rapid development of this branch of McKesson & Robbins' business. He belonged to the school which placed quality in medicines first, and any movement towards the advancement of pharmacy was always sure of his support. He took great pride in the appearance of products, and the medals won by this corporation at various International Exhibitions are tributes to his management of the manufacturing department. Mr. Wickham also started the firm's "Annual Prices Current," a monumental publication in its day and the most complete list ever published by any drug house. It included every product that the druggist was likely to have a call for and was as much a reference book as a price list.

Mr. Wickham retired from McKesson & Robbins in December 1916, after fifty years' activity, during which he was always recognized as one of the hardest workers in the business. At the time of his retirement Mr. John McKesson and Mr. Wickham were the senior partners in the business. The former joined the American Pharmaceutical Association in 1867, and the latter in 1870.

He is a member of the University, Union League and Princeton Clubs, the St. Nicholas Society, the Metropolitan Museum of Art, the Chamber of Commerce of New York City, trustee of the Bowery Savings Bank, and the South Side Sport-

men's Club of Oakdale, N. Y., where he spends almost half of his time. He occupies an apartment at 270 Park Avenue, New York City, with his daughter.

His apartment is filled with a remarkable collection of bric-a-brac and antiques, chief among which are a collection of weapons from all parts of the world, a wonderful exhibit of Japanese sword guards and a collection of antique watch and snuff cases, one of the finest in existence.

Mr. Wickham has always been a great lover of outdoor sports. At Princeton he was an all-round athlete and served for four years as the regular catcher of the 'Varsity baseball nine. He was an ardent tennis player for many years and a devotee of golf up to the present time. Fishing and hunting have also appealed to him and for many years the office of McKesson & Robbins carried trophies of his prowess as a hunter.

E. G. E.

COÖPERATION BETWEEN INDUSTRIES AND UNIVERSITIES.

Relating to the subject indicated by title, President R. F. Ruttan, of the Society of Chemical Industry, said in part, in his presidential address at the Annual Meeting in Glasgow, July 4–11, 1922:

"The attempts to obtain satisfactory coöperation between industries and universities since the war have proved a very qualified success; many schemes have been suggested and tried on the American continent as well as in the Empire, and, except in isolated cases, the universities have not proven of any great or permanent assistance to the manufacturer. Successful collaboration occurs when the problem is one quickly solved and which can be handed over to the factory in a completed form ready for commercial development. Such conditions are rare. Most industrial problems require continuity of study by the same investigators and along the same line of research extending over a long period, and call for special apparatus, often of a kind unsuitable to a university building. It is further recognized in factory practice that the inventor of a process or substance should himself carry it through the semi-commercial stage and be able by his experience, to meet the new conditions and difficulties of large-scale operations. Many of the universities of England, Canada, and the United States are situated in industrial centers, in very intimate relations with the industries of the place, and naturally identify themselves, with the needs of these industries. They find on the spot the subjects for research and also frequently an opportunity of trying out their ideas in factory practice. Coöperation between the factory and the university in this way is highly desirable and decidedly to the advantage of the university. Research in the abstract sciences and the study of their applications are not incompatible.

The universities should be chiefly the training ground for research men. The undergraduate is frequently so fully occupied during his regular course in acquiring a knowledge of the essentials of his science that he cannot acquire originality in meeting new conditions or that independence of thought and intellectual dexterity which comes from the result of being thrown on his own experience. University researches are specially designed for training advanced students in principles and habits of work which underlie all research. Capacity for research is the valuable product the countries of the Empire expect from the scientific departments of the universities. Therefore any State system designed to develop industrial research should especially consider the needs of the universities. A State endowed research institute would aid British science by encouraging research along the border lines between the sciences. The associated development in the same organization of abstract and applied science in closest contact with each other is the most recent stage in the evolution of the problem. We find a movement on all sides towards this end."

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

PUBLIC INFORMATION RELATING TO PHARMACY.

THE News Service of the Drug Trade Board of Public Information has interested the public in matters that concern pharmacy, and relative to service rendered by pharmacists. The growth of a newspaper depends largely on its news columns, but is also responsive to its efforts in giving the public other valuable information. The bulletins of the Drug Trade Board of Public Information* contribute to the latter service, and the very fact that they have been accepted for publication proves their value to the press, the public, and to pharmacy.

We are apt to be unmindful of the time and thought necessary for carrying on this work, and these lines are, in a very limited way, expressive of appreciation of the service rendered by and through the agency of the Director of the News Service.

The Journal of Industrial and Engineering Chemistry, for July, quotes applicable texts for popular lectures in chemistry; they are taken from the preface, written by Dr. E. E. Slosson for the revised edition of Smith's "Intermediate Chemistry." Three of the four paragraphs quoted that apply as well to pharmacy as to chemistry are reprinted:

> "Chemistry has control of life and death. An animal or plant deprived for a time of the proper chemical compounds will starve or if it imbibes a minute amount of the wrong chemical compounds it dies at once."
>
> "'Chemistry is the science of terror and pity for it provides both the materials for destruction and for healing. It is man's weapon against disease, insects, fungi, pain, and sleeplessness. It tears down and builds up.'
>
> "'Chemistry is the democratic science. It bestows upon the poorest what once were the gifts of kings.' It is the joyous science and contributes most to the pleasures of life. 'Chemistry is a practical science. None touches every-day life at more points except its sister science, physics, between which and chemistry no clear boundary can be drawn. None has more avenues for profitable employment.'"

In the bulletins of the Drug Trade Board of Public Information the laity has been informed that scientific research is an activity of the American Pharmaceutical Association; that the standards of foods and drugs are provided largely, if not chiefly, by pharmacists. These thoughts will bear repetition—that efforts are made to protect patients from harmful effects of drugs needed to allay pain; investigations are continuously carried on, seeking to perfect and find remedial agents for the afflicted; standards are provided for drugs and foods to safeguard the public. What is needed to interest the laymen more in pharmacy is—a greater interest in pharmacy, its work and achievements, by pharmacists. E. G. E.

*See February JOUR. A. PH. A., 1922, p. 140, and April number, p. 310.

THE AMERICAN CHEMICAL INDUSTRIES AND PENDING NATIONAL LEGISLATION.

PHARMACY has a deep interest in the future of American chemical industries and, therefore, is concerned in the recent action of President Harding, on the advice of the Department of Justice, instructing the Alien Property Custodian to take steps to secure the return to the custodian of all patents sold, under the "Trading-with-the-Enemy Act," to the Chemical Foundation, Inc. Another important action is that taken by the Senate in defeating the dye embargo provision of the pending tariff bill.

We quote parts of an address made by President Harding about two years ago, on "Responsibilities of Technical News and Obligations of the People:"*

"Government increasingly is becoming more technical, because its great problems more than ever before are essentially technical problems, particularly as they relate to internal affairs of development and more efficient utilization of our natural resources, which in many things are dangerously approaching exhaustion. Not only must these be conserved, but substitutes must be found and developed.

"This work is the duty of men best qualified to do it. These men are the technically educated men, who form the industrial 'shock troops' of the army of civilization. They are civil engineers, mechanical engineers, electrical engineers, mining engineers and metallurgists, chemical engineers and chemists, and, lastly, that body of faithful men who constitute a condition precedent to all the rest, the teachers of technical men.

"Our government maintains great scientific agencies in the Patent Office, Bureau of Mines, Bureau of Standards, the Geological Survey and the Bureau of Chemistry and Experiment Stations of the Department of Agriculture. Here engineers and chemists and representatives of every department of applied science are employed under capable scientific administrators, to encourage the development of our natural resources, to discover new processes for their utilization, and to protect the inventive mind in the fruits of its prolific genius to which we are indebted more than to any other one source for the material greatness of our country.

"These agencies must be supported liberally, for their work is as seed which yield their harvest in the increased fruitfulness of all human endeavor in field, mine and factory.

"The great technical profession forms the cornerstone of material civilization. Their practitioners are derelict to their greater social responsibilities in their indifference to political affairs.

"I want to encourage that interest and will help to reward the effort.

"As one who appreciates the value of their work and worth, I pledge myself to aid our technical men in all matters looking to the popular recognition of their respective professions."

In the February number of JOUR. A. PH. A., pp. 81–83, an editorial was printed under the caption of "Pharmaceutical Progress and the Chemical Industries," and the purpose of this writing is merely to make a record, pending further developments.

A Committee of the American Chemical Society was unsuccessful in securing a hearing by President Harding on July 19. The Society strongly supports the Chemical Foundation; the names of the Committee members follow: *Chairman*, Dr. Edgar F. Smith, president American Chemical Society; Dr. George D. Rosengarten; Dr. John Teeple, New York, treasurer of the society; Prof. R. H. McKee, professor of chemical engineering, Columbia University; Dr. A. D. Little, Boston, member of the institute of chemical engineers; Prof. J. F. Norris, of Massachusetts Institute of Technology; E. R. Weidlein, director of Mellon Institute, Pittsburgh;

**Chemical Age*, September 1920.

Dr. Julius Stieglitz, University of Chicago; William Hosking, Chicago, and Dr. H. E. Howe, acting secretary, A. C. S.

The latter made public the following statement:

"It was indicated in connection with our request for a hearing at the White House that it was desired to let the President know the effect which we believe his action against the Chemical Foundation would have upon the whole American chemical profession and industry as distinguished from the dye situation alone; that other phases besides the making of dyes are involved, such as medicines and pharmaceuticals and drugs.

"It was believed that the President had not been able to acquaint himself sufficiently with the entire effect of this move against the Chemical Foundation. We wanted to submit additional information to him and to get any information which he might have that would enable us to decide whether we should change our attitude of defending the Chemical Foundation to one of supporting the administration."

The Government's attack on the Chemical Foundation influenced, to some extent, the action of the Senate in defeating the dye embargo provision of the tariff bill. There seems to have been some confusion of thought relative to the two questions, and Dr. Charles H. Herty has expressed his opinion that the measure will receive a favorable majority vote when it again comes up in the Senate.

The American chemical industry must be encouraged and maintained in the interest of American industries, trade, commerce, defense and public health.

The record of the war period and the progress made by the American chemical industries since then prove the superior qualifications of American chemists of all divisions, in these important industries. E. G. E.

TRAFFIC IN NARCOTICS.

THE French Academy of Medicine has given publicity to the statement that, according to police data, the Paris cocaine traffic has increased fourfold since 1916. Other European countries evidence, by legislation and news items, that illegal sales of narcotics in import and export are increasing; smuggling is carried on systematically; traffickers in one country coöperate with those of another. A recent cable dispatch from Germany stated that "the demand for cocaine is something tremendous." The methods employed in carrying on this traffic are described.

There is a growing knowledge and a more general desire for placing the blame of illegitimate narcotic sales where it belongs; we quote from a recent editorial of a Philadelphia paper:

"Such scandalous implications as lie in the report of policemen in the narcotic drug business which followed a gun battle in the old Tenderloin do not involve the police department any more than they involve the voting majority in this city.

"People who regularly turn out to sustain the power of a corrupt political machine should not complain when outrageous abuses of authority are charged against petty agents of one or another boss. And if officials in high places seem to look kindly and with toleration upon the dope rings and their leaders, what is the use of blaming occasional policemen who venture into drug peddling in a small way?

"One of these days we may know the truth about the relationship of some of the minor police officials to the illicit whisky problem. Then there will be news worth reading."

The comment was responsive to a recent case in court, which was given much publicity, resulting in the return to prison of a convict who had been paroled. We

cannot do better for our purpose in this writing than to quote from other press editorials:

"But the man was released on a deliberate misrepresentation of the facts, made by somebody, and the men active in the release did not seem to be interested enough to make any attempt to find out what the facts were.

"They are on the defensive, and they should be kept on the defensive so long that other judges will hesitate before they lend themselves to any such method of perverting the ends of justice."

"Sterner laws are needed in every state to punish drug peddlers and restrict the traffic. And there is no reason why, when existing statutes are revised, they should not be made broad enough to bring into the class of criminals liable to legal punishment all those who deliberately aid and encourage individuals or groups engaged in the illicit drug trade or conspire, under any pretense, to make them immune under the law."

The important thing, however, is to put existing laws into effect, and enlist public coöperation in the selection and election of officials. Simplified regulations applying to dispensing of narcotics in prescriptions are possible; the grave danger is in the unlicensed sale, and the sinister influences which directly or indirectly are at work among those charged with the enforcement of laws. E. G. E.

DISCONTINUANCE OF THE OLDEST DISPENSARY OF THE UNITED STATES, AS A SEPARATE INSTITUTION.

THE Philadelphia Dispensary, the first dispensary in the United States, closed its old colonial doors last month, after 137 years of service. The Dispensary was first opened in a building rented from Christopher Marshall, of a lineage of Philadelphia druggists. Other names well known to pharmacists associated in the founding of the institution are: John Bartram; Joseph Parrish, antecedent of Dillwyn and Edward Parrish; the latter was president of the American Pharmaceutical Association in 1868; John and Joseph Carson. In order to link the past with the present, it is stated that Stephen Parrish, the artist, is a son of Dillwyn Parrish, and Maxfield Parrish, also famed in the art of color illustration, is a grandson. It is of further interest to note that Dr. John B. Carson, descendant of one of the founders, was the last secretary of the institution. Among the early contributors and founders are many others prominent in the affairs of that period.

The Dispensary is not closed on account of lack of funds, for the annual expenses have practically been met by the income of its investments which amount to more than $150,000; its services will be continued through the Pennsylvania Hospital. During 1921 more than 21,000 patients were treated in the Dispensary, and nearly 57,000 prescriptions were filled; during the first year of its existence 719 patients were given medical attention.

Strict rules for the guidance of the institution have remained in force, the old phraseology being retained in part. According to the *Bulletin*, July 17, 1922, the "Book of Rules" for the present year provides that the resident physician shall keep the establishment in neat and reputable order; the assisting physician and apothecary are allowed the privilege of absence in the evenings and on the first

day of each week, provided both are never absent at the same time; they are admonished to be kind and courteous in word and manner; the district physicians are required to attend promptly any case brought to their notice and "to be kind and forbearing in all respects, as in respectable private practice;" to observe simplicity in prescribing, "to select the least expensive articles and to avoid directing more medicine than will be required for the treatment of the case," and not to allow their office "to be made subservient to the use of any school, clique, institution or person whatever."

When this institution was founded there was strong antipathy against "going to a hospital," and the announcements of its services were carefully worded, as will be discerned in the following quotation from one of them: "the sick may be relieved in a manner perfectly consistent with those noble feelings of the human heart which are inseparable from virtuous poverty, and in a manner also agreeable to those refined precepts of Christianity which inculcate secrecy in acts of charity and benevolence." E. G. E.

SELF GOVERNMENT IN BUSINESS.

In an address to the National Lumber Manufacturers' Association, Secretary Hoover suggested that the best way to keep the Government out of business was to introduce more self-government into it—that is business should establish its own standards and its own system of inspection.

The *New York Commercial* comments editorially, in part:

"No one who has come in contact with its operations will fail to agree with Mr. Hoover that bureaucratic government is cumbersome and inefficient. The tendency in recent years has been altogether too much toward that form of Government supervision, and it is only now that its danger is beginning to be understood. We are no longer the free people we thought we were, certainly not so far as business is concerned. With the growth of the country, business has grown also, and we now have to regard it from the national standpoint. With the development of communication and transportation, business has naturally spread itself over the entire country, and, as this is a big country, business has to be big too.

"Unfortunately the minds of our legislators have not grown in proportion, and the bigness of business scares them. They realize that the Government is big, because the Government is the people, and so they conclude that big business must be held in leash by that which is bigger than itself, which is the Government. This is right enough up to the point where the laws have to be revised to meet the new conditions so that there is working machinery to enforce the principles of common honesty and fair play. But to go beyond this point and to tell business how to conduct itself in detail is going too far. Subordinate Government officials earning less than $5,000 a year are expected to tell business executives earning anywhere from $25,000 to $100,000 a year what to do and what not to do. To avoid this Government interference two things are necessary: one is to broaden the minds of those who make our laws, and the other is for business to introduce that measure of self-government suggested by Secretary Hoover that shall remove from the Government the excuse for interfering.

"The only hope of good government, in Mr. Hoover's opinion, a view that will be shared by students of affairs generally, is to keep Government functions down to a minimum. The trouble is that there is too great a tendency now to introduce politics into business instead of business into politics. There is too great a temptation for the demagogue to make political capital out of baiting big business, and as we have good reason to know, a politician has no heart or conscience when his own political welfare is involved."

PROBLEMS, WE, AS OFFICIALS, HAVE IN COMMON WITH THE TRADE.*

BY ARNO VIEHOEVER.†

Close examination of the evidence collected in the trade of crude drugs, spices and food products will show that practically the same problems which confront the honest dealer confront also the official entrusted with the enforcement of the Food and Drugs Act.

Inadequate methods of handling the raw product from the time of collection until it reaches the consumer frequently are the cause for a condition to which both dealer and official justly object. Carelessness during gathering may result in excessive dirt and account for the presence of plant material other than that wanted.

Inadequate drying may change the normal appearance and composition of the product. Insufficient drying will induce subsequent spoilage by mold or bacteria. Neglect in shipping and storing will without fail injure the raw product often to such an extent that no amount of subsequent care will eliminate the harm done. The consideration of principles applied during handling of perishable products will be a forceful means to obtain and preserve products of high quality.

These principles, as a whole, should be better understood. As they have recently been worked out jointly by Mueller and Viehoever[1] for crude drugs and spices, they may be discussed in brief.

Collecting.—Leaves, flowering tops, and herbs are usually collected at the time of flowering. Dry leaves and flowering tops contain not more than 10 per cent of stems. The whole herb should represent true proportions of leaves, flowers and small stems as found growing under normal conditions. Since large or woody stems are practically valueless, their removal usually enhances the value of the drug. Flowers should be gathered when they show the first signs of opening. Tree barks are usually collected in the spring when the sap flows, since they are easiest to peel at this time. Glucoside-containing barks, such as wild cherry, are collected in the autumn or winter, before the sap begins to flow. When the drug consists only of inner bark, the outer bark can best be removed before peeling and drying. All surplus wood should be removed from the bark before or after drying. Root barks are best collected in the autumn. In general, rhizomes and roots of perennial plants are collected in the autumn at the end of the growing season. Spring digging of roots must be done before the plant shows indications of beginning the new season's growth. Roots of annual plants should be collected just before flowering. A few biennials and perennials, whose roots become very woody and quite valueless in two or more years, should be collected at the end of the first year of growth from seed. Seeds and seed-like fruits should be collected when ripe. Certain seed-like fruits such as cubeb, allspice, cardamon, and black pepper, are collected when nearly ripe.

Drying.—Drugs and spices can be adequately dried for storage by regulation of temperature, humidity and circulation of air. The loss of moisture in drying should be steady. If heated, the temperature should be gradually raised, not over 35° C. in the case of flowers and drugs containing volatile constituents, and, as a rule, not exceeding 40° C. to 50° C. in other cases. Higher temperatures may cause undesirable changes in chemical composition of the drug.

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* Address given before the meeting of the Association of Food and Drug Officials, Southeastern States, Asheville, N. C., July 24–25, 1922.

† Pharmacognosy Laboratory, Bureau of Chemistry, Dept. of Agriculture.

[1] For use of the U. S. P. Revision Committee.

Cleaning Fresh Drugs and Spices.—Leaves, herbs, and flowering tops with excessive amounts of adhering soil should be cleaned by agitation or light beating before the drug becomes completely dry and brittle. Much of the soil adhering to roots, rhizomes and tubers can be removed with the fingers or by shaking at the time of digging. Freshly collected plant parts, especially roots, can be successfully cleaned by washing and a satisfactory drug results if the material is dried under proper conditions. Washing should be practiced as soon as possible after collection, before the fresh drug has an opportunity to wilt or dry. The drug should not be left in the water longer than is absolutely necessary for effective cleaning and should then be quickly air dried, spread out thinly and turned frequently, to facilitate even drying. Seeds or seed-like fruits should be cleaned by sifting or winnowing before being packaged.

Cleaning Dried Drugs and Spices.—Dried drugs containing excessive extraneous material of an undesirable nature must be sorted by hand, unless practical mechanical means for cleaning are available. Impurities differing from the drug parts in size or shape can usually be separated by sifting. If the impurities differ from the drug in specific gravity, they can be removed by applications of regulated air blasts or suction, or by means of special machines which operate on the gravity principle. Gravity separations by means of liquids can be practiced on drugs which are quite impermeable and whose active constituents are practically insoluble or unaffected by the liquid used to effect the separation. Bits of iron or steel can be removed with magnets.

Storing.—Crude drugs and spices should be stored in a cool, dry place, protected from light. Drugs stored at a temperature of 50° F. or below are not attacked by insects. Hygroscopic drugs should be stored in special containers, over a dehydrating agent such as lime, or in rooms whose humidity can be kept low. Small lots, 100 pounds or less, subject to attack by rodents or insects can be preserved in closed containers to which, for every pound of drug, a few drops of chloroform or carbon tetrachloride are added from time to time. Large lots can be preserved from injury by fumigation with hydrocyanic acid or carbon disulphide.

In order to obtain a fair idea of the general condition adequate sampling, and satisfactory methods of analysis are an evident necessity. A few suggestions may therefore be added:

Sampling.—In sampling crude drugs and spices it is essential that the samples drawn should be truly representative, thus giving an accurate index of the contition and value of the entire lots. A sample made by mixing portions drawn from the top, middle and bottom of the package usually fairly represents the material in the remainder of the package. Seeds and seed-like fruits can best be sampled by using an instrument similar to the standard grain sampler. A sample of about half a pound for an individual package, and about one pound for a composite is in most cases sufficient for detailed examination. The size of the sample and the number of packages to be sampled will depend upon the nature and condition of the material, as well as upon the judgment and experience of the sampler. At least 10 percent of the packages should be sampled, in lots of 100 packages or more, while an increasing greater percentage should be sampled in smaller lots. Large samples or composites can be reduced by quartering. When sampling crude drugs the physical condition and odor of each package should be noted to ascertain possible damage.

DETECTION AND ELIMINATION OF DIRT.

The presence of dirt in marketable products, whether they be foods or drugs, is highly undesirable. The same amount may be quite conspicuous in some products, such as seeds or fruits, and not noticeable in others, such as hairy leaves

or powdered spices. It may be mentioned here that the Federal Government has undertaken a nation-wide campaign, in order to eliminate obviously dirty drugs from the market. A press notice, sent to trade papers and the daily press, informed those interested of the Bureau of Chemistry's plan. A letter endorsing the press notice, sent to the dealers in the primary markets as well as those in manufacturing districts, requests close coöperation. Both may be here quoted as of possible interest, not only for the information conveyed, but for the exact procedure followed:

LETTER TO DEALER.

"There is enclosed herewith copy of a Press Notice which may be of interest to you. It has been prepared from information supplied by this Bureau and expresses the action contemplated. In order that the campaign may be successful in full measure your close coöperation is highly desirable.

Trusting that our joint action will result in the general improvement of crude drugs, domestic as well as imported,

Very truly yours,

W. G. CAMPBELL,

Acting Chief."

PRESS NOTICE.

Start Campaign to Make Crude Drugs Cleaner.

"A campaign to eliminate excessive dirt from crude drugs has been started by the Bureau of Chemistry, United States Department of Agriculture, which is charged with the enforcement of the Federal Food and Drugs Act.

"An investigation by the Bureau shows that the shipping of dirty domestic crude drugs is a rather widespread practice and is due largely to carelessness in gathering. Excessive dirt constitutes adulteration in crude drugs shipped within the jurisdiction of the Federal Food and Drugs Act. In some instances crude drugs were found to contain 20 percent or more of dirt.

"This practice results not only in an economic loss to the purchaser who usually buys the crude drugs by weight but obviously lessens the medicinal value of the drug. This condition may be dangerous to the user, restrict the sale of the drug, and consequently lower its market value. Care on the part of the gatherer would prevent this great excess of dirt. The dealer who ships the crude drugs into interstate commerce is responsible under the Federal Food and Drugs Act and should take steps, say the officials, to correct this condition in order to free himself from liability to prosecution.

"Ordinary care such as is exercised in marketing garden products such as carrots, turnips or spinach is usually sufficient. For instance, the washing of the fibrous roots, such as goldenseal or unicorn root, before drying would materially improve existing conditions, in the opinion of the Bureau. Inspectors have been directed to give special attention to shipments of crude drugs. Appropriate action under the Federal Food and Drugs Act will be taken in all cases found to be in violation of the law, it is said."

Dealers themselves have repeatedly tried to remedy this condition, but only a few houses, exercising a sharp control, have apparently succeeded in getting the clean drugs they want. Some of the standards, such as that for unicorn root in the National Formulary, are arbitrarily based on samples which have been carelessly collected and consequently contained 10 percent or more of dirt. It is confidently hoped that the State officials will join in this campaign.

A fair judgment as to the amount of dirt can often be obtained by using a very fine screen, even bolting cloth, through which the dusty sand passes. Another means, from which we hope a good deal, is the flotation of the material with carbon tetrachloride. Uniform drugs of small size, such as the Umbelliferae fruits, caraway, cumin, anise, etc., may be floated directly; others may preferably be pow-

dered. The plant material floats, being specifically lighter, and the dirt, as a rule, sinks to the bottom. This method, while not as accurate as the determination of total and acid-insoluble ash, even from limited data, is believed to give a good indication as to whether the drug is satisfactorily clean or whether it is suspiciously dirty.

OTHER METHODS OF EXAMINATION WHICH CAN BE CARRIED OUT WITHOUT GREAT LOSS OF TIME AND WITHOUT SPECIAL LABORATORY FACILITIES AND EQUIPMENT.

The seeming lack of coöperation on the part of the trade, it is believed, is frequently caused by their unfamiliarity with the more or less involved methods carried out to ascertain whether the product meets the standard or not. Simple tests, facilitating the identification of a product, and detection of the adulterant or substitute, should always be available, even though this value may be limited to an indication rather than an absolute proof. Such simple methods are for instance color tests.

Through a treatment of marjoram with ammonia in the cold or caustic alkali in the hot, the presence of certain adulterants can be detected. Coriaria and althea leaves are colored brown; cistus leaves brownish black; while marjoram leaves remain bright green. Coriaria leaves, furthermore, become intensely black with dilute iron chloride solution, which does not change the color of marjoram leaves.

Maple bark (*Acer spciatum*), still frequently substituted for crampbark (*Viburnum opulus*), can be readily detected by staining its tissues with dilute iron chloride solution, which colors them black, while viburnum tissue is colored green. The use of sulphuric acid in the differentiation of cubeb from its inferior substitutes is probably well known—only the genuine fruits are colored intensely red, owing to the presence of cubebin.

Heating the dried material in a test tube permits the identification of such drugs as quinine bark, which yields a red tar. It often indicates also the presence of crystalline volatile substances, such as caffeine in tea, coffee, or cassina, the sublimate forming in the colder part of the tube.

A simple exposure of beans of the Lima type to ammonia produces an intense yellow coloring of the tissue called hilum, where the seed was attached to the pods. Inasmuch as the results in this test are probably due to the presence of linamarin, yielding hydrocyanic acid, present only in beans of the Lima type, beans of other types can be readily differentiated. While domestic beans of the Lima type are harmless, certain tropical varieties have been found poisonous. This test with ammonia, then, will be of use in the hands of the official or the importer receiving a shipment of beans for import, in that he can instantly decide whether or not he has before him beans of the Lima type that might be harmful and should be further analyzed to determine the actual yield of hydrocyanic acid.

The list of such tests could be increased, but their value for our purpose is probably sufficiently demonstrated.

The work of the food and drug official will be, it is believed, increasingly appreciated if he assists the trade in collecting and disseminating information concerning the adequate gathering, cleaning, drying, storing, shipping, milling, sampling, examining and reconditioning of our raw products, whether they are ultimately to be used for medicinal, condimental or food purposes, an interesting field of activity that is bound to yield results of benefit to both the trade and the consuming public.

THE APPROXIMATE DENSITIES OF OINTMENTS—AMMONIATED MERCURY AND ZINC OXIDE.

BY J. A. W. LUCK.

No data seem to have been published on the density of ammoniated mercury. For zinc oxide, "Landolt and Boernstein Tabellen" give data for both the crystalline and amorphous varieties. The densities of ammoniated mercury and zinc oxide will vary considerably with different specimens, depending particularly upon the manner of their preparation. Since in the computation of the density of ointments, knowledge of the approximate density of the substances is necessary, it was thought advisable to determine these values. Obviously such a determination cannot be made in water, since ammoniated mercury reacts with water in the following manner

$$2\ HgNH_2Cl + H_2O = HgO.HgNH_2Cl + NH_4Cl,$$

while in the case of zinc oxide the reaction is

$$ZnO + H_2O = Zn(OH)_2.$$

For ammoniated mercury alcohol was chosen as the displacement liquid, and benzine for the zinc oxide. The balance available for this work was sensitive to 2.5 mg., which suffices for the approximate determination of densities. The displacement weighings were made in a thin-walled glass stoppered perfume flask.

In the indirect determination of densities the following relation exists. Let

m_a = mass of substance, d_a = its density to be determined,
m_b = mass of an equal volume of liquid, d_b = its density,
m_c = mass of a definite volume of liquid,
m_w = mass of same volume of water, d_w = its density
m_k = mass of liquid + m_a.

Therefore $m_b = m_c - (m_k - m_a)$, $m_a/d_a = m_b/d_b$, $m_c/d_b = m_w/d_w$,
since $d_b = m_b/m_a \cdot d_a = m_c/m_w \cdot d_w$,

$$d_a = m_a/m_b \cdot m_c/m_w \cdot d_w. \qquad (1)$$

In the above formula d_w is the density of water at 27° C.
d_w 27°/4° C. = 0.996539.

The masses determined by weighing against brass weights in air have to be corrected, since the flask displaces a greater volume of air than the brass weights. Let

m = mass of substance in air, d_s = its density,
m_o = mass of substance in a vacuum,
d_a1 = density of air, d_b1 = density of brass,
$m/d_s \cdot d_a1$ = mass of air occupying the same volume as the substance,
$m/d_b1 \cdot d_a1$ = mass of air occupying the same volume as the brass weights, (2)
then $m_o = m + m/d_s \cdot d_a1 - m/d_b1 \cdot d_a1$.

However, since the experimental conditions were not sufficiently accurate for the application of this correction, this correction has been neglected.

The materials used were Merck's ZnO, alcohol U. S. P. grade of unknown source, $HgNH_2Cl$ source unknown and benzine commercial grade not U. S. P.

The temperature of the liquids and room were 27° C. The densities were computed at 27°/27° C., and corrected for temperature.

DATA.

m_a	$HgNH_2Cl$	0.875 Gm.	ZnO	1.295 Gm.
m_k	$HgNH_2Cl$ and alcohol	5.35 Gm.	ZnO and benzine	5.36 Gm.
m_c	Alcohol	4.6 Gm.	Benzine	4.24 Gm.
m_w	Water	5.7 Gm.	Water	5.695 Gm.
m_b		0.125 Gm.		0.175 Gm.

$HgNH_2Cl$.

m_a Gm.	m_b Gm.	m_c Gm.	m_w Gm.	d. 27°/27° C. Alcohol.	d. 27°/27° C. $HgNH_2Cl$.
0.875	0.125	4.6	5.7	0.807	5.65

ZnO.

				Benzine.	ZnO.
1.295	0.175	4.24	5.695	0.745	5.51

The density of alcohol has been determined accurately at various temperatures. Amorphous zinc oxide has a density of 5.42. It will be interesting to compare the densities determined in this experiment with the values given in "Landolt-Boernstein-Roth Tabellen."

	Computed Values. d. 27°/27° C.	Computed Values. d. 27°/4° C.	Tabular Values. d. 30°/4°	Tabular Values. d. 20°/4° C.	Tabular Values. d. 25°/25° C.
Water		0.996539			
Alcohol	0.807	0.804	0.802	0.811	0.810
Benzine	0.745	0.742			
$HgNH_2Cl$	5.65	5.63			
ZnO	5.51	5.48		5.42	

It is apparent that the determined values compare favorably with previously published ones. The accuracy, however, includes only the first two figures, the second decimal place is doubtful.

When completely miscible substances are mixed the resulting volume is not necessarily equal to the sum of the individual volumes of which the mixture is composed. This is particularly true of aqueous solution, the resulting volume is less in most cases, but in a few cases greater than the sum of the volumes of the constituents.

For substances which are closely related it has been found that the physical properties are additive.

Thus, if $v_1, v_2, v_3, \ldots\ldots v_x$ are the volumes which upon mixing have a total volume V, this volume will be found to be equal to the sum of the individual volumes, *i. e.*,

$$V = \Sigma (v_1, v_2, v_3, \ldots\ldots v_x). \qquad (3)$$

Substances which are not closely related show the greatest deviation from this relation. Under "closely related" are meant substances which have similar structures as the organic compounds C_nH_{2n+2}, C_nH_{2n}, C_nH_{2n-2}, etc., substances which have similar physical properties, fats, oils, etc.

Since ointment bases belong to the latter group, little or no volume changes occur upon mixing two or more of these, and, since with few exceptions no chemical reactions take place between the ointment bases and the solids which enter into their composition, the density of these mixtures can be readily determined from their individual densities. A convenient method is the graphical solution of this problem, if we construct a diagram of two related quantities, plotting one as the ordinate the other as the abscissa, for closely related substances such a plot should be a

straight line. Care must be taken to choose the correct quantities as a simple calculation will show. If we consider the equation

$$VD = v_1d_1 + v_2d_2,$$

and for the sake of convenience choose 1 cc as the total volume, we may write this equation,

$$D = v_1d_1 + (1 - v_1)d_2 = v_1(d_1 - d_2) + d_2,$$

and if we plot the two variables v_1 as abscissa and D as ordinate a straight line will result. On the other hand, the equation

$$M/D = m_1/d_1 + m_2/d_2$$

will produce a curve if plotted in a similar manner. Assuming the total mass to be 1 Gm., we may write the equation

$$1/D = m_1/d_1 + (1 - m_1)/d_2, \text{ or}$$
$$1/D = [m_1d_2 + (1 - m_1)d_1]d_1d_2 \therefore D = d_1d_2[d_1 + m_1(d_2 - d_1)]$$

this is an equation of a curve (see Fig. 1).

A simple relation exists between the percentage by volume and percentage by weight and the corresponding density.

If we consider v_a the % volume of mass m_a and density d_a,
v_b the % volume of mass m_b and density d_b,
V the total volume of a mass M and density D,
$m_a = v_ad_a$, $m_b = v_bd_b$, M = VD.
$100 : \%m_a :: VD : v_ad_a$ or
$\% m_a = 100v_ad_a/VD.$

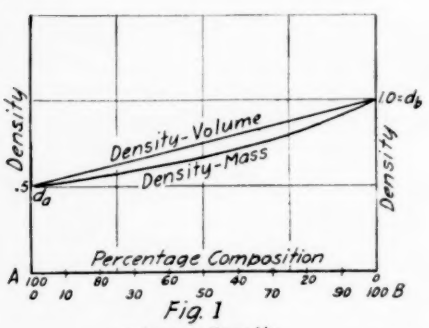


Fig. 1

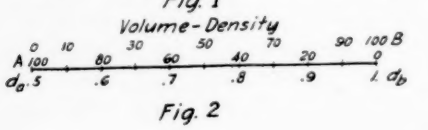
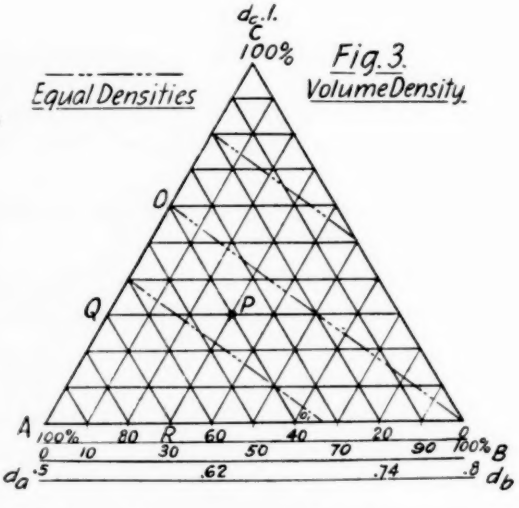


Fig. 2



A simplification in the graphical analyses of two component systems may be introduced for the percentage volume-density plots. If we plot the difference in the densities of the two components and the percentage by volume along the same straight line, Fig. 2, any point along that line will show the density of the mixture represented by that point directly, if the extremities of the line represent the densities of the pure substances.

For three component systems we may make use of the triangular diagrams introduced by Gibbs, which have been used extensively for temperature and composition diagrams of ternary alloys by Tammann and others. These diagrams are equilateral triangles, the corners represent pure substances, the sides mixtures of two components, and a point inside the triangle mixtures of three components.

Roozeboom and others have used such diagrams ruled with lines drawn parallel to the sides of the triangle. Thus in Fig. 3, a point, P, denotes a mixture of OC% of A, AR% of B, AQ% of C.

It is self-evident that lines can be drawn through the area of the triangle, each point representing mixtures having the same density. For a percentage composition by volume and density diagram it is necessary to proceed as in the two component systems. Densities may then be read off directly.

Equation 3 may be written as follows:

$$M/D = \Sigma\ (m_a/d_a,\ m_b/d_b,\ m_c/d_c \ldots\ldots\ldots m_x/d_x)$$

from which D may be computed for any number of components.

Using this method, the densities for ointments were calculated. The necessary data were taken from the U. S. P., U. S. Dispensatory and "Landolt and Boernstein Tabellen."

DENSITY OF OINTMENTS.

Unguentum Acidi Borici	0.86	Unguentum Aquae Rosae	0.94
Unguentum Hydrarg. Amm.	0.90	Unguentum Sulphuris	1.00
Unguentum Hydrarg Flav.	0.97	Unguentum Zinci Oxidi	1.23
Unguentum Hydrarg. Dil.	1.12	Unguentum Belladonnae	0.95
Unguentum Hydrargyrum	1.76	Unguentum Strammonii	0.95
Unguentum Iodi	1.03	Unguentum Gallae	0.93
Unguentum Iodoformi	1.01	Unguentum Acidi Tannici	0.95
Unguentum Phenolis	0.94	Unguentum Chrysarobini	0.93
Unguentum	0.93	Unguentum Picis Liquidi	0.99

In addition to the references given in this text the following sources have been used in compiling the data, "Hagers Handbuch," "Chemiker Kalender," "Olsen's Annual" and the YEAR BOOK.

SUMMARY.

Methods have been described to compute the densities of ointments and the approximate densities of nearly all official ointments have been calculated.

The density of ammoniated mercury has been determined to be 5.63 at the temperature 27°/4° C.

LONG ISLAND CITY, N. Y.

THE PREPARATION OF BENZYL BENZOATE OF HIGH PURITY.

BY W. F. KAMM AND A. O. MATTHEWS.

Benzyl benzoate has been proposed as an antispasmodic and although it is still too early to determine to what extent it is actually efficient and to what extent we may be misled by the natural enthusiasm for a new therapeutic agent, it nevertheless seemed of importance to investigate the various methods of preparation of this compound and to examine also the specifications for purity that are accepted at the present time.

Although benzyl benzoate is a simple organic compound which should be available in pure condition, it proved a surprising fact that the trade specimens examined and reported upon by the A. M. A. Laboratory in 1919[1] were found to be distinctly impure. From among five specimens examined, one was found to contain chlorine, whereas all of them were found to be low in ester content, the variation being from 87.3% to 97.3%. The standards adopted[2] included the requirement of an ester content of not less than 95%. The writers felt certain, however, that a product of higher purity might be produced even as a technical product, and accordingly the present work was undertaken.

The non-saponifiable impurities in benzyl benzoate may not prove to be very harmful, but very little information is available on this point. A pharmacological study of benzyl benzoate has recently been reported by Mason and Pieck[3] who found various commercial preparations to differ somewhat in toxicity. There is a possibility that these variations may be due to the non-ester impurities. On the other hand, the presence of chlorine is quite certain to indicate the presence of toxic benzyl chloride.[4] It seemed of interest also to determine whether or not the impurities in benzyl benzoate are partly responsible for the disagreeable taste of the product.

Benzyl benzoate has been identified in certain natural plant products.[5] In the laboratory, it has been prepared by the action of (*a*) benzoyl chloride upon benzyl alcohol, (*b*) benzyl chloride upon sodium benzoate, and (*c*) alcoholates upon benzaldehyde.[6] Gomberg and Buchler[7] have recently shown that reaction *b* may be conducted even with aqueous solutions of sodium benzoate.

The Claisen method (*c*) furnishes one of the most convenient and practical methods for the preparation of this ester. The materials involved are cheap, the yields are usually good, and, above all, no trouble need be anticipated from the presence of benzyl chloride if a good grade of benzaldehyde is used.

In the preparation of a product for therapeutic use, the last consideration is especially important and there is little doubt but that the bulk of benzyl benzoate now offered for sale is manufactured by this method. But why is the product impure?

According to Claisen[8] benzyl benzoate is prepared in the following manner:

A 1.5-gram portion of sodium is dissolved in an exactly sufficient quantity of benzyl alcohol, 200 grams of benzaldehyde are added, and the mixture heated on the water-bath during *several days*. The reaction mixture is treated with 10 cc of glacial acetic acid and with water, the oily layer being separated and subjected to fractional distillation. A yield of 150 grams of pure, constant boiling benzyl benzoate is obtained together with 40 grams of unchanged benzaldehyde.

These directions appear to be specific and simple enough to serve as a fairly satisfactory method of preparation, but when the experiment is conducted accord-

[1] "Rep. Lab. Am. Med. Assoc.," **12,** 84–7, 1919; *C. A.*, **14,** 3500, 1920.

[2] "New & Non-Official Remedies," 1920, 1921 and 1922.

[3] *Jl. Lab. & Clin.*, Med. 6, 1920.

[4] *J. Am. Chem. Soc.*, 42, 2061, 1920.

[5] *Ann.*, 152, 131, 1869.

[6] Claisen, *Ber.*, 20, 649, 1887; cf. also *J. Chem. Soc.*, 75, 1155, 1899.

[7] *J. Am. Chem. Soc.*, 42, 2059, 1920.

[8] *Loc. cit.*, p. 649.

ing to directions, the results obtained are by no means constant. Although Claisen reports a yield of only 75%, it is found that the method is capable at times of producing a 90–95% yield, while at other times the yield may be as low as 25%. Moreover, the product obtained is not pure benzyl benzoate for it contains from 3% to 15% of unsaponifiable matter. These analytical results check well with the variation in ester content of the various samples examined by the American Medical Association Laboratory.[1] It was the purpose of this investigation to explain the variable results obtained by the use of the Claisen method and to present laboratory directions that will result in a uniform high yield of a product possessing an ester content of 99% to 100%. It is believed that this has been accomplished.

The low ester value of technical benzyl benzoate is not due to the presence of benzaldehyde as an impurity, in fact benzaldehyde will require an amount of alkali for saponification that is exactly equal to an equal weight of ester as is shown by the following equation:

$$2C_6H_5CHO \xrightarrow{NaOH} C_6H_5CO_2Na + C_6H_5CH_2OH$$

This reaction of benzaldehyde must be kept in mind in proposing standards of purity for benzyl benzoate.

Reinvestigation of the Claisen method shows that variable results have been produced by the neglect of a few essential details in the manipulation. (*a*) Benzaldehyde is added to the solution of sodium in benzyl alcohol, whereas the reverse order should be used in mixing the two solutions. (*b*) Nothing is specified concerning the temperature of the sodium benzylate mixture at the time of mixing. It should be kept cold. (*c*) The final reaction should be conducted at a temperature slightly below that of the steam bath, and is complete in an hour; heating the mixture during several days is detrimental.

THE PREPARATION OF BENZYL BENZOATE.

$$2C_6H_5CHO + C_6H_5CH_2ONa \longrightarrow \left[C_6H_5C(OCH_2C_6H_5)_2(ONa) \right] \longrightarrow C_6H_5C(=O)-O-CH_2C_6H_5 + C_6H_5CH_2ONa$$

Three grams of metallic sodium are dissolved in 70 grams benzyl alcohol and after the solution has cooled to room temperature it is gradually added with thorough mixing, to 454 grams of C. P. benzaldehyde (which must contain less than one per cent of benzoic acid). The reaction mixture has a tendency to become warm but the temperature should be kept slightly below 50–60° by cooling if necessary. A pasty gelatinous mass results which, after about one-half hour when the mixture no longer shows evidence of generating heat spontaneously, is warmed on the water-bath during about an hour with occasional shaking.

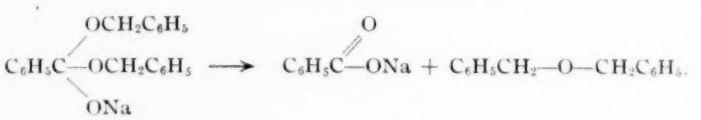
The cooled reaction product is treated with 200 cc of water, the layer of oil separated, washed once with a second portion of water, and subjected to vacuum distillation. The first fraction of the distillate will contain benzyl alcohol together with unchanged aldehyde, as well as a small quantity of water. The tempera-

[1] *Loc. cit.*

ture will then rise rapidly to the boiling point of benzyl benzoate when the receivers are changed. The product boils at 184–5° (uncorrrected) at 15 mm. and analysis by saponification shows it to consist of 99% ester. A yield of 410–420 grams is obtained which corresonds to 90–93% of theory. This benzyl benzoate supercools readily but after solidifying melts within one degree of the highest recorded value (19.4°) and therefore need not be refractionated unless material of exceptional grade is required.

NOTES.

In the presence of sodium benzylate, two molecules of benzaldehyde react with the alcoholate to form the addition product indicated in the equation written above. The addition product then decomposes in the manner indicated. When the reaction mixture is overheated an important side-reaction may occur.



Dibenzyl ether no doubt forms the chief impurity in benzyl benzoate. Since the boiling point of the former lies near that of the ester, it is not removed during the process of purification by distillation.

We may now explain the causes of variations in yield by the use of the older methods. When benzaldehyde is added *to the alcoholate*, and especially when the latter is still warm, local overheating results; in fact, the temperature may rise far above 100° with the result that benzyl ether is formed. Simultaneously, the sodium benzylate is converted into sodium benzoate, which is of no value for inducing the desired reaction and consequently very little benzyl benzoate is obtained. The same side-reactions explain the failure of this experiment when the benzyl alcohol used in preparing the catalyst (sodium benzylate) is contaminated with benzaldehyde.

The benzyl alcohol used in this preparation must be free from aldehyde. One cc dissolved in 50 cc of water and treated with a freshly prepared clear solution of phenyl hydrazine acetate should give no appreciable precipitate.

The benzaldehyde should be titrated in order to determine its acidity. If it contains sufficient benzoic acid to react with a considerable proportion of the sodium alcoholate, a poor yield of ester will be obtained. Less than one percent of benzoic acid will not interfere seriously with the yields obtained, but the presence of larger quantities of the acid will be found to be detrimental.

The order of mixing the reagents and the temperature of the ingredients at the time of mixing is the most important factor in the experiment. The temperature at which the reaction-mixture is maintained after mixing, provided that it is held below 100°, is less important from the standpoint of purity.

When benzaldehyde was treated with a cold solution of sodium benzylate and the reaction-mixture maintained at steam-bath temperature for about two days, a 90% yield of product was obtained. This product on analysis was found to consist of 97% ester. Benzyl alcohol prepared from it did not dissolve to give a clear 2% aqueous solution. In a reaction in which the benzaldehyde was added to the benzylate without cooling, there was obtained a low yield (20–30%) of a product

possessing a very low ester value. According to the improved method now presented, a product is obtained which analyzes 99–100% ester.

The reaction mixture is not treated with acetic acid as usually recommended for the reason that such a procedure yields an ester contaminated with benzoic acid.

The recovered benzyl alcohol can be used for the preparation of a second lot of benzyl benzoate, only after it has been boiling with strong caustic to remove any benzaldehyde present.

The benzyl benzoate of special purity described above was found to possess a somewhat improved taste. Unfortunately, however, the extremely unpleasant after-taste that handicaps benzyl benzoate appears to be typical of the pure substance, since it is alleviated only partly by removal of the main impurity.

CALCIUM CHLORIDE ADDITION COMPOUND OF BENZYL BENZOATE.

As has been shown by J. Allain[1] ethyl acetate is capable of forming addition compounds with inorganic salts such as $MgCl_2$ and $CaCl_2$ in which one molecule of the inorganic salt is combined with 2 molecules of the acetate. A similar class of compounds is obtained if benzyl benzoate is allowed to react with anhydrous $CaCl_2$.

Varying amounts of benzyl benzoate were added to $^1/_4$ molecular portions of pulverized fused calcium chloride. The flasks were corked and allowed to stand 24 hours. Solidification of the contents took place after 3–4 hours, but no evolution of heat was noted.

The reaction products were covered with ether, the lumps broken up with a stirring rod and the solid filtered and washed several times with ether. The ether used had been previously dried over $CaCl_2$. The filtered solid was further freed from adhering ether by exposure to dry air during 20–30 minutes. The combined ether washings were evaporated on the water-bath and the recovered benzyl benzoate weighed. From three experiments the following results were obtained:

Benzy benzoate Gm.	Fused $CaCl_2$ Gm.	Benzoate recovered Gm.	Wt. of addition product Gm.
42	28	18	45
63	28	38	50
84	28	62	46

The amount of benzyl benzoate reacting with a given weight of calcium chloride is found to be independent of the amount of ester initially added. This is shown not merely by the weight of the calcium chloride addition product formed but also by the amount of ester recovered.

The calcium chloride addition product is a white, crystalline powder which slowly absorbs moisture when exposed to the atmosphere and therefore must be preserved in tightly corked containers. From the proportions of the two constituents involved in the reaction, the composition of the addition compound is found to correspond to the formula, $C_{14}H_{12}O_2.2CaCl_2$.

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CHEMICAL RESEARCH DEPT.,
PARKE, DAVIS & COMPANY.

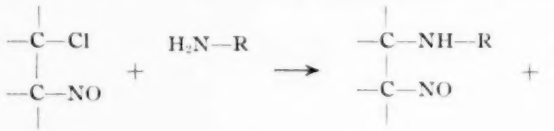
[1] J., 1885, 1159.

CONTRIBUTIONS TO THE KNOWLEDGE OF FOREST PRODUCTS.

II. The Action of Phenylhydrazine on Pinene-nitroso-chloride.

BY ROLAND E. KREMERS.

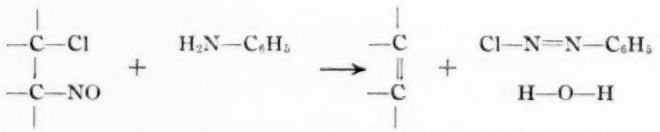
The following is a preliminary discussion of a new reaction involving nitrosochlorides. After Wallach had improved the technique of preparing nitrosochlorides from unsaturated compounds, the reaction became one of the most important of those used to isolate and to identify certain terpenes and related compounds.[1] But it was soon found that the resulting nitrosochlorides had decomposition points that lay close together. Hence more advantageous compounds were sought and were presently found in the nitrolamines prepared according to the general reaction:



On the whole the reaction appears to be general since such a variety of compounds as ammonia, methyl-amine, allyl-amine, aniline, and naphthylamine—to select only types from the list—have at one time or another been involved successfully in nitrolamine reactions. And indeed this was in a measure to be expected since they but illustrate a fundamental type reaction of organic chemistry, *i. e.*, the formation of secondary or tertiary amines from primary or secandary amines and a halogen substitution product:

$$RX + H_2N{-}R' \longrightarrow R{-}NH{-}R' + HX.$$

If there are variations from this type reaction, it is only reasonable to assume that they are in some way due to the peculiar structure of the molecule involved. Such instances Wallach finds in pinene-nitrosochloride, methylindene-nitrosochloride, and tetrahydrobenzol-nitrosochloride. In the case of pinene nitrosochloride it is generally stated that aliphatic amines, secondary heterocyclic amines as piperidine, and aromatic amines as benzylamine, react normally, but that aromatic amines of the type aniline and toluidine react atypically to regenerate the hydrocarbon. Thus:



and $H_2N{-}C_6H_5 + Cl{-}N = N{-}C_6H_5 \longrightarrow H_2N{-}C_6H_4{-}N = N{-}C_6H_5 + HCl.$

In the course of his experiences with nitrosochlorides, the writer has often wondered as to the real cause for this difference. Finally a certain skepticism developed which led to a closer scrutiny of the facts in the original literature. At present it must be admitted that the difference between the conditions under which aniline has been allowed to react upon pinenenitrosochloride as compared with those for benzylamine or piperidine is not sufficiently great to warrant an *à priori* conclusion that the above generalization is more apparent than real. Meanwhile

[1] For the chemistry of the nitrosochlorides, see O. Wallach, "Die Terpene u. Campher," 2nd ed.

it was noted that bases derived from hydrazine had not been employed. Since hydrazines can be alkylated just as amines, the idea presented itself to try out this reaction. The choice of phenylhydrazine as the representative with which to start was prompted partly by the desire to see whether it would react as an "aromatic amine" or as an amine that does not come within this pale. The outcome of these speculations when tested in the laboratory is outlined below. For a preparation of pinenenitrosochloride the writer is indebted to Mr. J. C. Seabright.

The following substances were mixed in an acetylation flask.

Pinene-nitrosochloride	5 Gm.
Phenylhydrazine, Kahlb.	5 cc
Alcohol, 95 p.c.	10 cc

The flask was then set over a wire gauze and warmed very cautiously by a small flame; the mixture was frequently shaken. After the reaction had set in it was allowed to complete itself. This procedure is analogous to Wallach's preparation of limonene-nitrolanilide. As the reaction progressed the pinene-nitrosochloride disappeared and larger plate-like crystals were formed. The reaction mixture was allowed to cool which caused it to set to a crystal-mass. The precipitate was filtered out by suction, washed with a little 95 percent alcohol until free from all traces of yellow color, and pressed between filter paper to dry: product A.

The filtrate, which now contained the other products in alcoholic solution, was precipitated by the addition of water. Only a slight odor of pinene could be detected in the oil. Hydrochloric acid was next added in excess to keep in solution basic material on the supposition that an excess of phenylhydrazine was present. The oil which did not dissolve was extracted with ether and separated. After evaporation of the ether an oil, mixed with well defined crystals, was obtained: product B.

The acid solution thus freed from insoluble matter was then made alkaline with an excess of ammonium hydroxide. An oil precipitated which soon crystallized: product C.

The crystalline material in product B was separated by suction filtration and blotted between filter paper. The compound was readily soluble in cold alcohol, but was found to crystallize out very well during the spontaneous evaporation of such a solution containing a few drops of petroleum ether of b. p. 40–60° C. Yellowish crystals, m. p. 147–48° C.

Product C comprised more material than B. It was recovered by suction filtration and, after being washed with water, was dried for two days between filter paper. It was readily soluble in cold alcohol but largely insoluble in petroleum ether b.p. 40–60° C. It was accordingly thoroughly washed with petroleum ether containing a few drops of alcohol. This gave a product composed of but faintly yellowish, hard prisms. M. p. 148–50°. Analyzed according to the Dumas method, 0.1610 Gm. of substance yielded 23.8 cc of N_2 at 24° C. and 744.5 mm. pressure, equivalent to 16.21 percent N_2.

N_2 calculated for $C_{16}H_{23}ON_3$ = 15.38 p.c.
N_2 calculated for $C_{16}H_{21}N_3$ = 16.47 p.c.

Product A was finally obtained in the form of beautiful pearly, lustrous plates, m. p. over 220° C. It was readily soluble in water. These facts suggested that it was phenylhydrazine-hydrochloride, which was proved as follows:

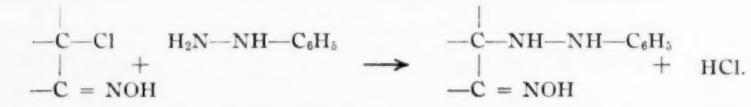
Product A	2.5 Gm.
Sodium acetate, fused,	2.5 Gm.
H_2O, q. s. to dissolve, solution filtered.	
Furfural	1.5 Gm.

An instantaneous reaction took place on the addition of the furfural. The reaction product was flocculated by shaking. The compound was purified by recrystallization from dilute alcohol; m. p. 95° C. Furfural-phenylhydrazone melts at 96° C. Therefore product A is phenylhydrazine-hydrochloride.

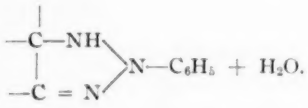
With these data before us, it is possible to consider critically the various alternatives presented by what we know of the chemistry of pinene-nitrosochloride.

The three probable courses of the reaction, to judge by the behavior of pinene-nitrosochloride toward other reagents, are: 1, nitrolamine formation; 2, elimination of hydrochloric acid with the formation of nitrosopinene; and 3, elimination of nitrosyl-chloride with regeneration of pinene. That any appreciable part of the reaction should have proceeded according to number 3 is most improbable because pinene was not regenerated and because the action of nitrosyl-chloride on phenylhydrazine should yield other products than phenylhydrazine-hydrochloride. Both reactions 1, and 2, fulfil the requirement that phenylhydrazine-hydrochloride should be formed as a byproduct. Reaction 2, can likewise be disregarded as a major factor because nitrosopinene was not formed; it melts at 130–31° (Wallach) as compared with products B and C which melt close to 150° C.

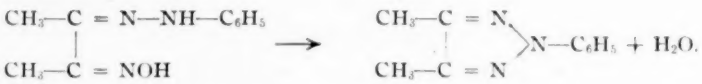
By this process of elimination, the presumptive evidence favors reaction 1. But there remains the discrepancy in the percent of nitrogen present. If we accept the statement that the colorless bimolecular nitrosochlorides are not true nitroso, but iso-nitroso, compounds, our generalized reaction can be formulated:



If subsequently ring closure takes place due to dehydration, we should have:



A partial analogy for this can be found in the formation of osotriazols from hydrazoximes of orthodiketones.



There is therefore established a very strong probability that product C is a compound having the structure

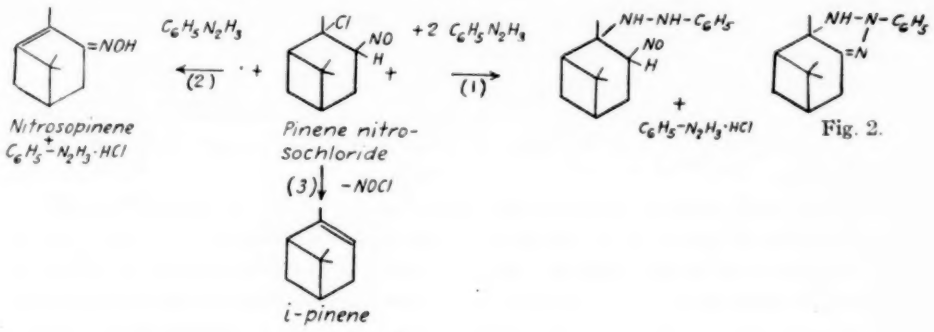


Fig. 1. Fig. 2.

It will be necessary to adduce further proof, especially in the way of reactions of this new compound, before giving it a name or attempting to decide with certainty just what structure is actually present. This work is being extended to other nitrosochlorides.

LABORATORY FOR ORGANIC CHEMISTRY
VANDERBILT UNIVERSITY
NASHVILLE, TENN.

CONTRIBUTIONS TO THE KNOWLEDGE OF FOREST PRODUCTS.

III. IDENTIFICATION OF PHENOLS AS 3,5-DINITROBENZOIC-ACID ESTERS.[1]

BY R. C. BROWN AND ROLAND E. KREMERS.

Introduction.—In the course of an investigation of some cohobated aqueous distillates, one of us became interested in the use of 3,5-dinitrobenzoic acid as a reagent for identifying the lower saturated alcohols.[2] By means of it a solid characteristic derivative of methyl alcohol was readily obtained.[3] Encouraged by this fact, the same reagent was used in the course of some as yet unpublished work on guaiacol. From this it was but a step to the thought of applying this acid as a reagent in the identification of phenols as a group.

Theoretical Considerations.—The phenols, like the alcohols, are hydroxy substitution products of hydrocarbons. The chief difference is that the rest of the molecule has an "acidifying" effect on the fundamental properties of the —OH group. Hence it is that the reactions involving the —OH group of phenols differ in degree rather than in kind from the reactions of the alcohols. For the same reason, practically all general methods of identifying alcohols have been tried with phenols with suitable modifications.

Of these the most important is perhaps the formation of phenylurethanes from phenylisocyanate. The method itself is excellent and the resulting products apparently are uniformly crystalline. However, it is not in general use, probably due to the cost of the reagent and its instability. The benzoic acid esters, prepared by the Schotten-Baumann reaction, are most generally used, but have a

[1] Based on part of a thesis submitted by R. C. B. to the Graduate Faculty of Vanderbilt University in partial fulfilment of the requirements for the degree of M.S., June 1922.

[2] Univ. of Wis. Pharm. Expt. Sta., *Circular* II, Oct. 1920.

[3] See Mulliken, "Identification of Pure Organic Compounds," Vol. I, p. 68.

serious drawback in that some are liquids. Hence it becomes impossible to distinguish at times between the presence of a truly liquid ester, or a mixture rendered liquid by impurity. The fact that the nitro group raises the melting point suggested that this difficulty might be obviated in that all 3,5-dinitrobenzoic acid esters might be crystalline. Hence a liquid or resinous product would point clearly to contamination.

Another method that has been used somewhat is the conversion of the phenol into the carbonate by means of phosgene. The objection to this lies in the toxicity of the reagent and in the difficulty of procuring it. Of other methods which do not involve esterification, the formation of nitro- and brom-substitution products may be mentioned. The resultant compounds appear to be characteristic only in certain instances, and the reactions involved are not among those best suited for identification. A recent method suggested by Reid depends upon ether formation.[1]

Preparation of Esters.—The first step in the preparation of the esters was the conversion of 3,5-dinitrobenzoic acid[2] into the acid-chloride.[3] This was accomplished by warming together in a small distilling flask 10 Gm. of acid and 10 Gm. of phosphorus pentachloride. When the reaction was complete the phosphorus oxychloride was distilled off under diminished pressure from a water-bath. The acid chloride was then poured out while still liquid, allowed to crystallize, and kept on a porous tile in a desiccator.

The next step was the formation of the sodium or potassium phenolate by allowing a slight excess of phenol to act on the metal suspended in dry xylene. Heat was used to facilitate reaction. After the complete disappearance of the metal, the acid chloride was added. The slightly exothermic reaction was completed by heating. The sodium or potassium chloride precipitated and the ester went into solution. Accordingly the xylene solution, after cooling, was transferred to a separatory funnel, washed with water to remove salts, with 5 percent NaOH to remove unchanged acid, acid-chloride, and phenol, and again with water until neutral. The ester was then recovered by the spontaneous evaporation of the solvent and recrystallized from alcohol.

The following compounds were prepared and analyzed:

Ester of.	Melting point.	Esterification.	N_2 calculated.	N_2 found.
Phenol	145–46° C.	Fairly rapid	9.72	9.73
o-Cresol	133–34° C.	Slow	9.27	9.34
m-Cresol	160–62° C.	Slow	9.27	9.30
p-Cresol	180–82° C.	Fairly rapid	9.27	9.34
Guaiacol	138–39° C.	Fairly rapid	8.81	8.75
Carvacrol	76–77° C.	Fairly rapid	8.14	8.33
Thymol	102–03° C.	Fairly rapid	8.14	8.32

The esters so far prepared have all been crystalline and are characterized by definite, rather widely separated melting points. Whereas the benzoic acid esters of *o*-cresol and carvacrol are liquids, the 3,5-dinitrobenzoic acid esters are solids.

[1] E. E. Reid, "Identification of Phenols," *J. Am. Chem. Soc.*, 39, 1917, 304.

[2] This acid can now be procured from the Eastman Kodak Co., presumably also from Kahlbaum. For preparation in smaller quantities see *Ber.*, 28, 1800, 1895.

[3] *J. prakt. Chem.*, [2] 69, 455, 1904.

THE ASTRINGENT PRINCIPLE OF MATÉ.*

BY JOSIAH C. AND BERTHA L. DeG. PEACOCK.

The article commonly known in the commerce of this country as maté or yerba maté consists of the leaf and leaf stalk of *Ilex Paraguayensis*, a species of holly indigenous to a great part of that section of South America, east of the Andes, south from the Amazon to below the mouth of the LaPlata.

The material itself is called yerba or caa by the natives, while the vessel in which the infusion of it is prepared is known as maté; and because of its use as an article of diet, the material of commerce is frequently spoken of as Paraguay tea. But the names yerba maté and maté for the leaf seem to have been generally adopted outside of its habitat.

On account of the presence of caffeine in maté, for over a hundred years past it has attracted the attention of chemists and pharmacists the world over. The names of many well-known plant analysts are associated with the early consideration of maté as a possible article of diet and use, as in the cases of tea and coffee; especially has this been true in European countries. In that part of the continent where it grows, it is the table and social beverage of the rural districts. It is not so generally consumed in the large cities of its native land; but the comparative consumption as relates to tea is many ti mes in favor of maté.

In the work of the first investigators effort was directed toward a study of the tannin or astringent principle; but no examination of this constituent has been made in the last fifty years that would warrant a greater credence than the statements of the times preceding these. With all possible deference to those who have reported on the tannin of maté, it must be said that their conclusions are scarcely justified by their work, for the application of reagents to this principle surrounded as it is in infusion by a cordon of closely adherent natives of the leaf is a method of examination too archaic for present-day demands. So that while much has been written practically nothing has been done during the last fifty years to carefully isolate and purify this principle. But the literature of the subject has been freely copied and endorsed. Most of the analyses of maté were published prior to 1887, although the last of general quotation was contributed by Kuntz-Krause in 1893. Attempts were made by some to extract the tannin, but the majority of those who have examined it contented themselves with results from reagents applied to the decoction of the leaf. From 1836, when Trommsdorff reported the presence of tannin and of the other substances he found, this astringent principle has been playing hide and seek with all who have pursued it, or they with it, for most have unwittingly discarded or destroyed it while they followed the phantom of hope that it was still ahead and yet to be overtaken. Indeed it is difficult to understand how one could be earnestly concerned with work on this substance without acquiring a better impression of it than is commonly recorded. In the article published in *Archiv der Pharmacie*, 1893, page 613, Kuntz-Krause has splendidly compiled the bibliography of maté. And he has done one other valuable service, even though involuntarily, for in substantiating in the main the results of the investigators who preceded him (especially the conclusions of Arata as referred to later) he has clearly shown that what he assumed to be maté tannin was not that substance. Among the later writings which have cited Kuntz-Krause and thus given his results

* Read before Pennsylvania State Pharmaceutical Association meeting, 1922.

extended authenticity is a paper by McKendrick and Harris in the *Pharmaceutical Journal* (British) July 16, 1898. But the theme of this text partakes more of preparation for a psychological acceptance of certain properties attributed, though rather contradictorily, to maté with the view to its adoption for beverage purposes than it does of any thought of adding definite knowledge.

The statement by Arata that "maté tannin requires 73.66 volumes of alcohol" to dissolve it proves beyond all doubt that he never had the substance which he sought, for it instantly dissolves in any amount of alcohol; and, likewise, does it invalidate his belief that (since he found the material upon which he worked to yield on dry distillation pyrocatechin and resorcin) the substance he thought was maté tannin "must be classed in the group of oxyphenylpropionic acid," while the abandon with which Kuntz-Krause acquiesced in this and in practically everything else which had been previously said about maté tannin demonstrates most effectively that his results cannot be accepted as dependable.

A fairly concise statement of the constituents which have been reported for maté is given in Maisch's "Organic Materia Medica" as follows: "Tannin, 10–16%; caffeine, 0.2–1.6%; little volatile oil and stearopten, wax, glucoside; proteids about 8%; ash 4 to 8%." Cellular and ligneous matter, resinous extractive and chlorophyl, the last in abundance, should be mentioned as known constituents, while carbohydrates of the sugar groups have been reported as present by some of the investigators. The statement by Maisch appears to be based on an analysis by Robbins (*Amer. Jour. Pharm.*, 1878, p. 273); while this work was of practical value as a contribution to the knowledge of the composition of maté, the process by which he determined the tannin would fail to give a pure product, and, therefore, not an accurate result.

Very elaborate plant analyses of maté were published by Peckolt in *Zeit. d. allg. Öster. Apot. Verein* and abstracted in the *Pharmaceutical Journal* (British) for August 18, 1883, and none more clearly show the mental attitude of the plant investigator of 1860–1865 (the period wherein they were made) toward the results to which they addressed themselves. In the *Pharmaceutical Journal* for May 29, 1886, Dauber reports a proximate analysis of maté and states that in an estimation of the tannin he found 5.22%; the determination was by the Procter (hide powder) method. From the effect in the mouth when maté is chewed, this proportion would appear to be nearer correct than 10–16% as given by Robbins or 12.5% as reported by Kuntz-Krause.

The vagaries of all this literature led to the work which we have undertaken. The isolation of the tannin for positive identification has been our sole object; little thought or effort has been put on any other constituent.

The result of this work has clearly shown that the astringent principle of maté is a phlobaphene which enters solution in water because of its existence in the leaf in combination with caffeine or allied substances, or by formation of such soluble effect upon treatment with water in preparing the decoction. That this principle actually goes into solution in water has of course been known as long as maté has been known, but why it does so was learned for certainty only after this work had been completed.

Boiled with water maté yields a dark amber or dirty greenish, fluorescent decoction, which upon concentration very materially deepens or darkens in color, as

though from the formation of a tarry substance that rises as a scum and appears related to and to contain chlorophyl originally present or as a product of some progressive change during the application of heat. Much deposition takes place in the form of an impalpable precipitate. The development of this black and black-green color and substance was prevalent throughout the course of this work, when a watery solution was evaporated; some features of a similar nature will be noted as we proceed.

A filtered decoction, which has been evaporated to about one-fourth of its original bulk, is a dark amber liquid possessing all of the peculiar odor and taste of maté. The taste is primarily aromatic with subsequent sensation of astringency; the properties are marked when the leaf itself is chewed. The effect of the decoction on blue litmus paper was strange in that it destroyed the color as though by a bleaching action. Egg albumen produced a considerable precipitate in the cold decoction; and within an hour the mixture was observed to be taking on a gradually deepening color of emerald-green shade that in twenty-four hours was extremely advanced. This was a highly interesting behavior, especially so since during the time it was progressing a similar effect had been observed in the use of hide powder as hereinafter detailed.

The decoction of maté was not precipitated on addition of acetic acid, but was so disturbed by hydrochloric and sulphuric acids; in the case of hydrochloric acid the effect was to separate the tannin-like substance from its caffeine association with consequent deposition of the former; while with sulphuric acid not only did all of this occur but the calcium salts in solution were also thrown out as insoluble sulphate, thereby increasing this precipitate in quantity compared to that from hydrochloric acid; the same effect was observed when alum was added to note its action in connection with the gelatin test. Indeed, acetic acid actually cleared up whatever slight opalescence might be present in the decoction. Gelatin renders maté decoction turbid, but only so on long standing. If however a few drops of acetic acid are added a dense turbidity instantly appears. McKendrick and Harris (*loc. cit.*) state that maté tannin neither tans hides nor precipitates gelatin, to which believed features they attribute much importance for their purpose. Ferrous salts produce slight yellowish green colors in the decoction and a greenish white precipitate characteristic of such insoluble ferrous formations. The cold decoction gave with ferric chloride a dark slate-green colored precipitate; with lead acetate a heavy granular, lemon-yellow precipitate. As to indications of permanency for the decoction, even upon standing for several days but little change was observable.

When hide powder was macerated in the clear decoction, it was found to almost completely remove all color, taste and odor, and did remove all cause of the peculiar effect on blue litmus paper; the resulting liquid had only the faintest reaction with ferric and lead salts. This behavior is well worthy of careful notice. It was in connection with this treatment of the decoction with hide powder that an unusual phenomenon was observed—the nearly white ball of hide powder from which the detannated liquid had been expressed was found after a few hours to have acquired a decidedly green color on its surface, the same developing inwardly with an orderly progression until at the end of a day's time the entire mass had become so colored.

The decoction yielded the tannin-like substance to acetic ether when shaken with that solvent. Both acetone and acetic ether applied directly to maté extracted the astringent principle. Separate portions of the tannin-like substance were removed by the use of each of these solvents in addition to the lots extracted with water. In each instance the particular lot of the substance was carried through the processes of purification both for its final identification and to compare the value of methods. It is doubtful if any of the methods of extraction or of solvents in such use, with the view of obtaining the substance for complete purification, have any advantage over the treatment with hot water, as in making the decoction; certainly none when care and cost of solvents are considered. The water exhausted material displays to the taste and sight as complete removal of desirable constituents as does that from treatment with any other solvent. The maté after extraction with any solvent looks but little different than it did before such treatment (as evinced by the samples* shown herewith) but the taste and smell will at once detect the absence of the peculiar constituents.

If the name maté were conjured into a fancy of inseparable comradeship of the native and the vessel in which daily he so frequently prepares his beverage, this fidelity of companionhood could full well be continued as the experience of the constituents during his or others' attempts to separate them; for after all soluble matter appeared to be removed from a given lot of maté with a certain solvent, the effect of the next solvent was as though the door of another room with identical furnishings had been opened. A notable instance of this behavior was when a lot had been exhausted with chloroform, the latter removed from the marc, and acetic ether applied, when afresh came what was believed to have been taken out; while water subsequently applied extracted a considerable amount of color and astringency. This experience brought to mind the manner of the native in preparing the infusion to be drunk; and, so far as the slow extraction of the soluble matter is concerned (but no further), justifies his custom—he makes three or four such treatments of the leaf with water in the vessel, and these he offers his guests in turn through the same tube (called bombilla) to their evident gratification of both appetite and propriety.

The writers secured by use of each of the solvents mentioned material that indicated tannin, but time and again this substance was mysteriously lost to well tried methods of purification, and of which treatments solution in water has always been demanded as of first importance in proof of purity. Failure succeeded failure until at last it was thought there might be a very closely adhering matter which enveloped the tannin and prevented its solution in water; but this was not found to be the reason for its strange conduct, which later was understood. However the tenacity with which the caffeine accompanied the astringent principle was not only noteworthy because troublesome, but gave rise to the thought disposed of in the preceding sentence. What in its absence would have given a handsome puffed product of the tannin-like substance in a vacuum flask, in the presence of even a minute trace of caffeine refused to rise above a varnish film. In all such cases caffeine crystals were plainly visible in the mixed residue when the acetic ether by which the tannin had been removed from a water solution was recovered;

* Samples were shown by the authors at the meeting.

and this caffeine, as we later learned, was the reason for the presence of any tannin in any aqueous liquid. To free the residue of these traces of caffeine it was mixed with small pebbles or sand as a means of effecting greater surface contact for such solvents as would normally dissolve caffeine but not tannin; chloroform was then applied in numerous successive portions with thorough trituration. After this treatment, the chloroform adhering to the residue was vaporized, and the tannin-like substance taken out by solution in acetic ether or in a mixture of alcohol and ether; both of which upon removal (in vacuo) left the tannin-like substance in the form in which it is here shown.* Several repetitions of this treatment were required to completely eliminate the caffeine, wax, chlorophyl, resinous extractive and other constituents which so persistently adhered. From the time the tannin-like substance had been removed from the decoction by acetic ether, up to this stage, indications of an eventually pure product had been gradually growing better. But the substance in its now isolated form had not been subjected to the presence of water, so the real surprise of the work was yet in store both as surprise and work.

The writers had never known the fluffy, porous product invariably obtained at this juncture in the past to be other than almost entirely soluble in water, although their experiences with tannins during the last few years has inclined them more and more to be prepared for the unusual, an attitude which here stood them well for in this instance the exact reverse was to be true; the tannin from maté was found to be apparently totally insoluble in water, hot or cold. However, the expectation of obtaining a water-soluble tannin still seemed positively warranted by the circumstance that the substance had been originally extracted from maté by water. This behavior was therefore at once accepted as the best evidence that the tannin was still contaminated with resinous or waxy matter, or both, which served to water-proof it; and much effort was put forth to remove these interferences. Over and over the substance was dissolved in alcohol and this solution attenuated with ether to the limit of dilution where the mixture of solvents would retain most known tannins (but precipitate certain vague extractive substances), but all of this was to no avail in changing the disposition of the tannin towards its solubility in water. The precipitates referred to in the preceding sentence were very closely scrutinized to prevent possible discard of the principle, and it is proper to say now that they were indeed infinitesimal in their total quantity; they were undoubtedly the result of some change in the tannin-like substance. These treatments failing to yield a water-soluble tannin, repeated separate triturations of the solid material in succession with ether, chloroform and benzol were made to remove what they might find as vitiators of the looked-for solubility. But the unusual in tannin had again been found, and a little deliberation, to which we now felt entitled, followed by tests proved the completion of the task before us, in this way; pure caffeine and the tannin-like substance were together dissolved in alcohol, the solution evaporated to dryness, and the residue treated with water, in which it was found to be readily and speedily soluble. While to try out the tannin in the most natural of its situations, this test was repeated using, instead of extraneous purified caffeine, the crudely improved article of this nature that had been separated in the work, when again the tannin dissolved both under the conditions de-

* Exhibited by authors at meeting.

tailed for the tests and also by contact with this crude caffeine in the presence of water without the intervention of alcohol. And from these solutions acidification with hydrochloric and sulphuric acids caused immediate separation of the tannin-like substance. Here then was the reason for solubility at the start and insolubility after perfect purification. It might here be recalled that gallotannic acid at first precipitates caffeine from its solution, but on continued addition redissolves the precipitate. By incineration of a portion in a platinum crucible the substance was proven free from all inorganic matter.

In appearance the substance so nearly resembles the official gallotannic acid of the United States Pharmacopoeia, that it would easily be mistaken for it; but it has that strikingly characteristic difference of insolubility in water; 1000 parts of water boiled with one part of the substance for half an hour failed to dissolve this minute proportion beyond the degree required to barely tint the liquid with the slightest yellowish tinge. It is readily and very freely soluble in alcohol (much more freely than the proportionate volume of 73.66 reported by Arata, indeed it requires no more than 0.7366); soluble in mixtures of alcohol and water, even those weak in the former agent. As inferable from preceding statements, it is insoluble in chloroform, strong ether and benzol, likewise in petroleum benzin; but soluble in mixtures of alcohol and ether, even to as low as ten percent or less of alcohol. Also, soluble in acetic acid, 36%, acetone and glycerin, without the need of heat. The odor of the substance, while tannin-like, suggests its origin, and though insoluble in water it strangely dissolves sufficiently in the saliva to thus again give indication of its source. It has pronounced sialagogue properties, as has the leaf. Its solution in alcohol gives with ferric chloride a dark green color and precipitate, without any evidence of blue whatever; with lead acetate a heavy canary-yellow granular precipitate. Though insoluble in water, in the presence of this medium acidulated with sulphuric acid the substance quickly and abundantly reduces potassium permanganate. Boiled with water both under reduced pressure and under that increased from confined steam, no appreciable change was effected in either the solubility or other observable features. The action of water acidulated with sulphuric acid is particularly interesting since such treatment of known tannins soluble in water results in the formation of other substances; no such change occurs here, however, for even under high magnification the substance insoluble from the start is found unaltered after hours of active boiling. The substance is already what this treatment usually produces.

Sodium carbonate solution instantly dissolves the substance with production of a golden yellow liquid; bicarbonate of soda solution showed but slow action towards dissolving the substance, which under the influence of its surroundings was rapidly altered in color as though by action of atmospheric oxygen; but when warmed (and thereby converted into carbonate) the solution dissolved such portion of the material as had not been altered as described. Sodium hydroxide solution ($\frac{N}{10}$ and weaker) immediately dissolved it. It is soluble in the weakest ammonia solution, giving a yellow color to the liquid, which was both decolorized and precipitated by excess of hydrochloric acid. Baryta water and lime water slowly dissolved it, but not without the alteration referred to and its attendant loss of material. All of these solutions displayed the yellow color given by sodium carbonate; all of them were reprecipitable by acidification with mineral acids,

and these precipitates under high magnification revealed the peculiar granular structure of the original substance. Lime water acted much more satisfactorily as a solvent than did baryta water; in the case of the former but little change took place before solution was effected, while with baryta water alteration seemed to have priority and preference. This should not be taken as indicative of its entire relation to barium oxide, however, for by rubbing the substance with barium carbonate until intimately mixed the substance slowly reacts with it in the presence of cold water, and rapidly with warmth, to form a soluble barium compound; and from the yellowish solution of which, hydrochloric acid again precipitated the tannin-like substance, while the color of this solution disappeared as did that of every other similar solution under this circumstance. Truly this substance is comparable to an acid anhydride of an inorganic salt.

Returning to further consideration of the green color obtained in the reaction with albumen, it was found that the purified astringent principle produced the same effect with albumen; and that these changes would occur both in daylight and in darkness. From casual observation it is believed that there may be a definite relation demanded between the agents involved, or that in very dilute solutions the appearance of the color is much slower. Within a few days, the green color and precipitate had turned to a dirty brick-red shade suggestive of this characteristic of the phlobaphenes; the liquid had no odor indicative of putrefactive changes. The disposition to form this green color was also shown in a medium of saliva. As manifestation of possible biologic relations, these behaviors are deserving of further study.

This substance has the physical and chemical properties of the so-called phlobaphenes in the highest degree of purification and permanence ever met with by us. Indeed these features so closely approximate those of the water-soluble tannins that the isolation of this substance in such pure form may well be regarded as a distinct advance in the knowledge of these elusive principles; and, especially should the presence of the subject of this paper as it occurs in maté in conjunction with caffeine serve to better assure our understanding of similar astringent drugs. It would be idle to speculate on the relation of this substance to water-soluble tannins, until more is learned of all of them, but its isolation proves again the need of constant caution in accepting the well intentioned and often laboriously produced work and results of the early times in plant analyses.

Knowing as we now do that the tannin of maté is combined or similarly associated with caffeine, we would, in any attempt to extract it for further examination, at once acidify the decoction with acetic acid and proceed to remove the substance by means of acetic ether.

If it should be named let its designation be the title of this paper.

ALOES AS A MEDICINE.*

BY BERNARD FANTUS, M.D.

The therapeutic use of aloe dates back to the days of classic Greece, though curiously enough, "The Father of Medicine," Hippocrates (5th century B.C.) does not speak of it; and it seems improbable that he did not know of it, if it had been in general use among his contemporaries. The earliest medical writer to mention aloe is Dioscorides, a Greek physician of the first century A.D., though, of course, its use must have been established among the Greeks considerably earlier than this. It must have been sometime between the period of Hippocrates and that of Dioscorides; and it might well enough have been during the time of, or shortly after the conquests of Alexander, The Great. This is attested to by a legend given in the writings of an Arabian geographer, according to which Alexander, after he had conquered Persia (about 333 B.C.), was advised by his teacher, Aristotle, to seek the island that produces aloe. Having finished his conquests in India, he returned by way of the Indian Sea and arrived at length at Socotra, the fertility and climate of which he admired. He removed the original inhabitants and put in their place Ionian Greeks whom he commanded to preserve carefully the plant yielding aloe because, without it, certain sovereign remedies could not be compounded. The Greeks remained under his protection and that of his successors, acquired riches, and in course of time they became Christians. It is believed that this account is a fable invented to explain the fact that the Mohammedans of the 9th, 10th, and 11th centuries found Christian Greeks in possession of the island; but, if it be a fable, it bears a strong resemblance to probability.

With the Arabian physicians aloe was a favorite drug; and they passed the Greek and Roman formulas for aloetic compounds, together with some new ones, on to the doctors of the Middle Ages. It is quite probable that aloe was the chief ingredient of the "Elixir Proprietatis" of Paracelsus, which according to this boastful quack would prolong life to its utmost limits, though he did not deign to divulge the composition of this wonderful remedy. This became known through a pupil of his, who published the formula for it, which ultimately became the tincture of aloes and myrrh. This shows that the idea that the period of life could be lengthened by keeping the bowel clean, long antedates that of Metchnikoff though the latter, characteristically for modern times, advocates diet (buttermilk and lactic acid bacilli) rather than medicine for this purpose.

The liquid preparations of aloes did not long enjoy popularity and extensive use. They are too nasty, and pills perform the work of aloes just as well. Hence we may consider all of the liquid aloetic formulas for internal use relics of a barbarous past, doomed to deletion, which, by the way, has been the fate of the sole pharmacopoeial survivor of these, the tincture of aloes in the present pharmacopoeial revision. The only rational use for a liquid preparation of aloes is externally as a sedative to itching or burning sensation. This effect of aloes is evidently the reason for the presence of a considerable quantity of this drug in the compound tincture of benzoin, the official representative of the famous old "Friar's Balsam," which was a popular and efficient application to bites and wounds of all sorts long before the chief reason for its efficiency—the antiseptic action of the balsamic

* Read at the May meeting of the Chicago Branch of the American Pharmaceutical Association as a part of a symposium on Aloes.

resins contained in it—had become known. F. W. Cook[1] advocates this tincture or, because pleasanter, a saturated solution of aloes in tincture of tolu, as, so far as he knows, the only thing that relieves the virulent itching of bites of the harvest bug.

The disfavor under which aloes labors by reason of its disagreeable flavor, is well illustrated by the advocacy of P. E. Hommell that myrrh be substituted for aloes in the compound tincture of benzoin, for this would constitute an improvement when this tincture is employed as an inhalant in bronchitis or croup. While the elimination of the peculiarly disagreeable odor of aloes, which persists for a long time after the pleasantly aromatic portion has volatilized, may seem desirable when the compound tincture of benzoin is used as an inhalant, the elimination of aloes from the formula would probably render this preparation less efficient in its historic use as a vulnerary. But why use the compound tincture of benzoin as an inhalant? Have we not in tincture of tolu or tincture of benzoin just as efficient and much more pleasant preparations for inhalation? For, after all, the sole virtue of the addition of a spoonful of any one of these tinctures to a pint of steaming water is to perfume the really active ingredient of the treatment, the steam.

I imagine that pill form for the administration of aloes, commenced to become popular with the dawn of the age of reason, the Rennaissance. In 1624, Raymond Mindererus published an entire book, the "Aloedarium" devoted to a description in loving detail of the virtues of each one of nine ingredients of a pill, the lineal ancestor of the compound rhubarb pill. Like Paracelsus, Mindererus, did not recommend his pills merely as a cathartic, but as a general tonic.

As reason became more and more dominant over tradition, the complex polypharmacy of the dark ages of medicine slowly gave way to the comparatively simple medication of to-day. The scholastic physician of the middle ages knew nothing about his remedies excepting by hearsay. The better training he had, the more medicines he knew of that might fit a certain case. He considered it his duty to make use of this knowledge for the benefit of his patients. These, indeed, were the days when doctors poured medicines of which they knew little or nothing into bodies of which they knew little or nothing. We still stagger under the inheritance of that past. How otherwise could be explained the composition of the Compound Cathartic Pill with its eight ingredients? No doubt the pill is powerful; but what proof have we that each and every one of its ingredients is indispensable for its full action. It would require more than fifty different sets of experiments in which aloes and each of the other ingredients would have to be compared when given separately and when combined with each other in all possible variations;—each set of experiments including at least 50 to 100 observations—to demonstrate that such combination is really advantageous.

At present the value of such formulas is explained on the entirely plausible theory of heterotopic synergism, which postulates that drugs acting on different portions of a functional system mutually reinforce each other. We may understand that aloes which acts chiefly upon the lower portion of the large intestine may take up the load carried to it by the calomel, which sets chiefly upon the upper portion of the small intestine; and it may very well be that there are one or more drugs pres-

[1] *Brit. Med. Jour.*, Sept. 7, 1918.

ent in these pills that act as "middlemen" between the two. Are all of them necessary? No one knows. It is to be regretted that these calomel-containing pills were not deleted in the ninth revision of the U. S. P., instead of the vegetable cathartic pills, as certainly, for popular and habitual use, the vegetable cathartic pills are much less dangerous than the compound cathartic pills, which are only too liable to produce salivation when employed in a careless manner, as I can testify from clinical experience. An attempt is being made in the present revision to remedy this error by coining a name for the C.C. pill that will divulge the presence of calomel in its composition. It is probable that the complex new name—and it must be complex to be scientific—will sound the death knell to the popularity of this sure shot shot-gun preparation.

What has been said must not be construed as a sweeping condemnation of drug combinations. Rational and successful combination is the mark of mastership in therapeutics, which few of us achieve. The combination, for instance, of aloes and podophyllum, which—besides clever advertising—is the secret of success of certain "patent" pills is quite rational. We may imagine that the action of aloes commences where the action of podophyllum, "the vegetable calomel," leaves off. Combination with intestinal carminatives, such as myrrh or asafetida, may advantageously antagonize the griping tendency of aloes by favoring expulsion of gas from the bowel. The combination of aloes and iron might be a capital prescription for the amenorrhea and constipation of chlorotic girls.

A good example of an unsuccessful attempt at "rational" combination is the "A. S. and B." pill. Nothing may seem more logical than to add to the aloin some strychnine for the purpose of increasing the irritability of the motor neurons on which the aloin is to act; nor might it seem that anything would be more suitable to counteract the reputed tendency of aloes to produce griping than the powerful antispasmodic, belladonna. Unfortunately, by giving them at the same time, they cannot possibly act together, because of the different speed and duration of action of the three agents. Aloin is slow in action, requiring from ten to twelve hours—that is why it is generally given at bedtime. Strychnine and atropine on the other hand, are rapidly absorbed and rapidly excreted, having but a brief duration of action. No experienced clinician would expect either of these alkaloids to act for more than four hours. By the time the aloin gets in action, the alkaloids have long since left the system by excretion into the urine.

To put these theoretical considerations to the experimental test, more than thirty volunteers in a class of medical students were given two pills each to be taken with an interval of about a week. One of these contained aloin; and the other the same dose of aloin with some extract of belladonna in the quantities found in the A. S. and B. pills. Strychnine was omitted, to reduce the experiment to its simplest terms. The pills were called No. 1 and No. 2 pills, and the experimenters did not know which of these contained the belladonna. They were asked to distinguish its presence by difference of action. The majority could not notice any difference whatever; a few thought the belladonna containing pills were the ones that produced more griping; a few, that the simple aloin pills acted more disagreeably. Clinical use of the official pills of aloes containing 0.13 Gm. each of aloes and of soap, as compared with similarily extensive use of the A. S. and B. pills, did not demonstrate any greater tendency to griping displayed by the one than the other.

It is gratifying therefore, that the Compound Laxative Pills (U. S. P. VIII) similar in composition to the A. S. and B. pill, with the no doubt uncalled for addition of ipecac, were deleted from the present Pharmacopoeia. However, these pills as well as the Compound Pills of Aloin Strychnine and Belladonna, N. F., containing some extract of cascara, in addition, are still extensively used. Rather popular at the present time are the unofficial "Cascara Compound Pills," each containing:

	Grains
Cascara	1/4
Aloin	1/4
Resin of podophyllum	1/6
Extract of belladonna	1/8
Strychnine sulphate	1/60 to 1/120
Oleoresin of ginger	1/8

One wonders whether they are popular because their formula is not contained in the U. S. P. and N. F. It has been said facetiously that the best way to destroy the popularity of a preparation is to make it official. Efficiency is, of course, granted to these as well as to all other aloes pills, no matter what their composition. The question is whether such polypharmacy is desirable or necessary.

Aloes along with other cathartics, is in danger of losing the high esteem in which it has been held. No longer is such medication considered "good for your system." We know that it is just as undesirable to acquire the cathartic habit as it is to become accustomed to a crutch, when we might just as well walk without one. It is only, when we have to choose between the crutch and not walking at all, that the crutch becomes the lesser of two evils. Much less of aloes would be used, and that, much more beneficially, if the people in general and druggists in particular would realize that cathartics, instead of curing constipation, are a common cause of it. The "good" evacuation caused by a strong cathartic may leave the bowel so empty that there is no fecal matter to remove the next day; and, if a person has the idea that a daily bowel movement is a necessity to health, he is led to take another pill with the result that he has to keep on taking them. There are people whose abdominal or intestinal musculature is so weak that they cannot have sufficient bowel evacuation without the use of medicine. For these, cathartics are just as useful as are eye glasses for those with weak ciliary muscles. Such intestinal cripples should be fitted with the proper medicament with at least as much care as should be expended on the fitting of eye glasses. The Roentgen rays enable us nowadays to discover where, in an obstinate case of constipation, the delay is located. When a resolute attempt at the cure of such constipation has failed, and the cause of the delay in evacuation is incurable colonic torpor, then we have the choice between making the patient a slave to the enema or a cathartic. The latter, being less troublesome, is generally preferred by the patient. For such individuals there is no better cathartic than an aloes pill of just such size as to give at least one and not more than two bowel movements in the twenty-four hours. The official pill may be too weak or too strong; though they form a starting point for the determination of the proper dose. In the interst of economy of drug action, and to give the system a chance to assert its independence of the need of medicine should such occur, it is best to take the pill only in the evening of any day on which there has been no evacuation. When thus used, we can say of aloes that it is a good medicine, one that does more good than harm.

THE BOTANY OF ALOES.*

BY WILLIAM B. DAY.

THE ALOE PLANT.

The aloe plant belongs to the Lily family (*family Liliaceae*, tribe *Aloineæ*). The genus Aloe takes its name from a latinized form of an Arabian name, and comprises between ninety and one hundred species, chiefly native to Africa. One species is found in the Mediterranean region, another is native to China. The aloe plants are succulent perennials, acaulescent or variously caulescent; leaves often large and crowded in rosettes or along the ends of the stems; flowers in spikose clusters, red or yellow, sometimes paler striped, equalled or surpassed by the stamens. In general aspect the medicinal aloe plants resemble much the century plant (*Agave americana*) but are smaller. However, aloe plants have been found in Natal that attained a height of thirty to sixty feet.

CULTIVATION.

Many species of aloe are cultivated as decorative plants for their stiff, harsh rugged habit. They require well-drained soil and but little water, and while of course, not hardy in temperate climates, they do well indoors. Extensive cultivation of medicinal aloes is carried on in the West Indies, chiefly on the island of Aruba but to lesser extent on the islands of Bonaire and Curaçao (Dutch West Indies). The offsets or cuttings are set out about eighteen inches apart in rows about the same distance apart, much as cabbages are started. The plants require little care. They bloom when a year old. Collection of the juice usually begins the second year and the plants continue to yield for about twelve years. Under favorable conditions the aloe plants produce offsets or sprouts abundantly and in Curaçao these are sold by thousands to growers.

PRODUCTION OF ALOES.

The aloe plants secrete a thin watery juice in thin-walled tubular cells which run lengthwise through the superficial portions of the leaves accompanying the vascular bundles. This juice is distinct from the thick mucilagenous juice which fills the parenchyma cells. After the close of the rainy season, the leaves are cut off the plants, close to the stem, and are stood on end with the cut end down, in a trough or other container. The aloetic juice is drained out without pressure and when a sufficient quantity has been collected it is evaporated to the consistency of a soft extract. In Aruba this evaporation of the juice is conducted in kettles over an open fire or in steam-jacketed vacuum pans. In Africa, the juice is often kept for a considerable time before evaporation, it ferments more or less, and is evaporated largely by exposure to sun and air, rather than by artificial heat. If the former method is employed the product is bright and shining, the so-called "capey aloes," though it becomes dull after prolonged exposure to air, if the slower method of sun-drying accompanied by more or less fermentation is pursued, the product is dull in appearance, constituting the so-called "hepatic aloes." While still soft the aloes is poured into containers where it hardens and in which it is shipped. West Indian aloes frequently comes in gourds, which have been emptied of their contents

* Read at the May meeting of the Chicago Branch of the American Pharmaceutical Association as a part of a symposium on Aloes. The historical part is here omitted because included in other papers of this symposium.

and then filled with the melted aloes, and having a piece of muslin plastered over the opening in the gourd. This variety also comes in tins or boxes. Socotrine aloes comes into commerce infrequently in goat skin (or monkey skin?) containers but more commonly in tins, boxes or kegs. It is occasionally quite soft when received, but quickly dries and hardens on keeping.

OFFICIAL SPECIES OF ALOES.

Aloe vera, Linne (*A. perfoliata var. vera*, Linne, *A. elongata*, Murray, *A. barbadensis*, Miller, *A. vulgaris* Lamarck, *A. flava*, Pers).—Stem or trunk attaining a height of 1 to $1^1/_2$ feet. Leaves densely crowded, 12 to 20 inches long, dilated below, tapering to a blunt point; margins with pale prickles; surface smooth, shining, dark green sometimes white-blotched. Flowering stem 3 feet high; flowers erect in the bud, afterward pendulous, arranged in an erect terminal raceme; the persistent membranaceous bracts exceeding the pedicels. Flowers about 1 inch long, tubular, yellow. This species is apparently native to the Mediterranean region but widely introduced throughout the tropics. It is the source of Barbados, West Indian or Curaçao Aloes. *Aloe vera* var. *officinalis*, Baker (*A. officinalis*, Forsk, *A. rubescens*, D. C.) is a larger Arabian form. *Aloe vera* var. *Chinensis* (*A. indica*, Royle, *A. Chinensis*, Baker) is a smaller Asiatic form with red-tinged flowers.

Aloe Perryi, Baker.—Stem or trunk about one foot high, simple. Leaves spreading, about 15 inches long and tapering from a $2^1/_2$ inch base, pale green, or reddish but not mottled, the margin beset with rather small brown-tipped prickles. Inflorescence about $1^1/_2$ feet high, somewhat panicled; flowers 1 inch long, reddish, becoming yellow, the green-tipped segments much shorter than the slightly constructed tube.

This species is now stated to be source of Socotrine Aloes, long ascribed to *A. succotrina*, Lam.

Aloe ferox, Mill. (*A. perfoliata ferox*, Ait., *A. muricata*, Haw., *A. horrida*, Haw., *A. pseudoferox*, Salm-Dyck, *A. subferox*, Spreng., *Pachydendron ferox*, Haw., *P. pseudoferox*, Haw.).—Stem 3 to 10 ft. high sometimes forked. Leaves numerous curved, lanceolate, glaucous, becoming reddish, 4 to 5 inches wide at base, 28 inches long, more or less prickly on both faces, the purplish margin with rather large red-brown teeth. Flower stem 4 ft. high, flowers $1^1/_4$ in. long, greenish yellow, with smoky-tipped segments, longer than the rather narrow tube. Native to the Cape region. The official source of Cape Aloes, to which no doubt other species contribute.

PHARMACEUTICAL PREPARATIONS OF ALOES.*

BY CLYDE M. SNOW.

The popularity of aloes as a therapeutic agent is attested by its antiquity, its considerable number of preparations and the tenacity with which they have held their places in the official books of this as well as other countries and in the practice of medicine. * * *

Probably the oldest preparation of aloes as well as the oldest pharmaceutical preparation in existence is Hiera Picra. It would seem from literature that this preparation was for sale in the shops of Damascus 1000 years ago and in Rome and Alexandria 2000 years ago in much the same form as we find it to-day in our stores. The common theory seems to be that it had its origin in one of the Aesculapian temples. Le Clerc attributes the first hiera to Themison, a physician who practiced in Rome 50 B.C. He used 100 drachms of aloes, 1 ounce each of mastich, saffron, Indian nard, carpobalsamum and asarum. Galen used a similar formula but made it into an electuary with honey.

* Read at the May meeting of the Chicago Branch of the A.Ph. A. as a part of a symposium on Aloes.

Pills of Aloes and Colocynth are said to have originated with the Greco-Roman physicians from Galen on. These came later to be known as Pilulae Cochia. The name came from the custom of earlier practitioners who were wont to order pills "the size of a coccus" (a lentil berry). These all contained Aloes with some other drastic purgative. "Coccion" meant a diminutive coccus, and pill of Aloes and Colocynth were frequently prescribed in this way. Subsequently this term was used to particularly distinguish these pills. The term is said to have come into rather general use in the seventh century, when Rhazes, the Arab, formally adopted it.

Pilulae Rufi may be traced to Rufus of Ephesus who lived in the reign of the Emperor Trajan. He invented a mixture of Aloes and Myrrh. This powder was later made into pills by the Arabs. Avicenna gave them under the name of Pilulae Pestilentiales. They were found in the early Edinburgh pharmacopoeias under the title Pilulae Communes.

Perhaps the first well authenticated preparation of aloes is the now famous Elixir Proprietatus originated by Paracelsus. He extolled the virtues of aloes in his Elixir Proprietatus. His claim was that it would prolong life to its utmost limits. Although he never gave a clear formula for it, his disciple, Oswald Crollius, deduced from his writings that it was tincture of aloes, myrrh and saffron with sulphuric acid. This medicine was very celebrated in all countries for many centuries. It has been official under the names, Elixir of Aloes, Compound Tincture of Aloes, and Tincture of Aloes and Myrrh. At the present time there is official in the "French Codex" an Elixir Garus containing aloes, myrrh, saffron, nutmeg, clove and cinnamon. This was so-called after a grocer named Garus who acquired great popularity under the Regency with his elixir. Saint Simon says, "he cured the Marechal de Villars with it and would have probably saved the life of the Duchess de Berry if the physician Chirac, jealous of his fame, had not administered to her a purge which killed her.

The Pharmacopoeia of the Royal College of Medicine of London, 1746, has among its formulas the following preparations of Aloes:

Gum and Resin of Aloes which is prepared from four ounces of Aloes. This is first boiled with two pints of water and then allowed to stand over night. The resin is precipitated. The supernatant liquid is strained and evaporated to dryness.

Vinum Aloeticum Alkalinum—Socotrine Aloes, Saffron, Myrrh, Ammonium Carbonate, White Wine. Digest for one or two weeks, then strain through paper.

Pilulae Aromaticae—Socotrine Aloes, Gum Guaiac, Aromatic Species, Balsam Peru. These constituents are made into a mass with syrup of orange.

Pilulae ex Colocynthide cum Aloe—Socotrine Aloes, Scammony, Colocynth Pulp, Oil of Clove.

Pilulae Rufi—Socotrine Aloes, Myrrh, Saffron. These constituents were massed with syrup of saffron.

Hiera Picra—Gum of Socotrine Aloes, 1 pound; Canellae Alba, 3 ounces.

Elixir Aloes—Tincture of Myrrh, Saffron, Socotrine Aloes.

Balsam Traumaticum—Benzoin, Styrax, Balsam Tolu, Socotrine Aloes, Alcohol.

That the popularity of Aloes did not wane in the next seventy-five years is evidenced by the large number of its preparations found in the first United States Pharmacopoeia compiled and issued in 1820. These include:

Pills of Aloes and Colocynth—Cochiae
Pills of Aloes and Myrrh—Rufi
Pills of Aloes, Myrrh and Guaiac
Pills of Aloes
Powder of Aloes and Canella—Hiera Picra
Tincture of Aloes
Tincture of Aloes and Myrrh
Tincture of Rhubarb and Aloes—Elixir Sacrum

That aloes held a premier position in the practice of medicine for the succeeding one hundred years is demonstrated by the increased number of preparations in our present official Pharmacopoeia and National Formulary, no less than twenty-seven being found in these books. They include:

Compound Extract of Colocynth
Pills of Aloes
Compound Cathartic Pills
Tincture of Aloes
Compound Tincture of Benzoin
Extract of Aloes
Antiperiodic Pills
Vegetable Cathartic Pills
Compound Pills of Colocynth
Pills of Colocynth and Hyoscyamus
Pills of Colocynth and Podophyllum
Pills of Iron, Quinine, Aloes and Nux Vomica
Post Partum Laxative Pills
Chapman's Dinner Pills
Cole's Dinner Pills
Hall's Dinner Pills
Pills of Aloes and Asafetida
Pills of Aloes and Iron
Pills of Aloes and Mastic
Pills of Aloes and Myrrh
Compound Pills of Aloes and Podophyllum
Pills of Aloes, Mercury and Podophyllum
Compound Pills of Aloes, Mercury and Scammony
Antidyspeptic Pills
Compound Pills of Aloin
Pills of Aloin, Strychnine and Belladonna
Compound Pills of Aloin, Strychnine and Belladonna.

In the present day practice objection is made to the very disagreeable taste of aloes. This of course accounts for so many pill combinations, and has led to a demand for the deletion of the Tincture of Aloes from the tenth revision of the Pharmacopoeia.

OUR KNOWLEDGE AND OUR SKILL ARE INHERITANCES.

"Our knowledge and our skill are inheritances. They have been bought and paid for by the laborious struggles of men and women down through the ages, through sweat and agony, through suffering, poverty and deprivation. They are ours by inheritance only, and we are the trustees of that knowledge and skill. They belong to society. It is not a question of whether we should give back part of them as a charity. Our first obligation is to the society from which all derive them. Men have never sought to carry the treasures of knowledge to the grave. They have ever sought to give them to the world, and we, through our application and study, seek to acquire what they have given to mankind. But it was to all men that the knowledge was given. No chosen few that use it have the right to sell it for private gain to others who use it for private gain unless in so doing they confer a true benefit upon society as a whole."

PHARMACEUTICAL FORMULAS

PROPOSED FOR "UNOFFICIAL FORMULAS, A. PH. A."

The formulas heretofore published will be found in Volume I, JOURNAL A. PH. A., pp. 169, 366, 505, 637, 760 and 1307; Volume V, pp. 309, 422, 529, 631, 748, 862, 991 (see also p. 1129), 1126, 1265 and 1397; Volume VI, pp. 79, 194, 298, 393, 486, 563, 643, 729 and 823. Volume X, pp. 292, 382, 468, 534, 628. See also Volume XI, p. 551.

For list of committee members and committees see April issue, 1921, p. 292. Suggestions for formulas, and comments on those published are invited. They may be sent to a member of the Committee or to Chairman J. Leon Lascoff, 1223 Lexington Ave., New York, N. Y.

SULPHURATED POTASSA.*

BY RALPH R. FORAN.[1]

This compound is official mainly because of its use in the preparation of "Lotio Alba," or "White Lotion." Although dermatologists may prescribe varying proportions of the ingredients, the following formula is the one published by the Committee on the A. Ph. A. Recipe Book:[2]

Lotio Alba
White Lotion

Zinc Sulphate	5 Gm.
Sulphurated Potassa	5 Gm.
Water, or Rose Water, a sufficient quantity to make	125 cc.

Dissolve each chemical in 60 cc of water, or rose water. Filter each solution and mix by slowly pouring the sulphurated potassa solution into the zinc sulphate solution, then add sufficient water, or rose water, to make 125 cc.

The U. S. P. describes sulphurated potassa as "a mixture composed chiefly of potassium polysulphides and potassium thiosulphate and containing an amount of sulphides corresponding to not less than 12.8 percent of Sulphur. Preserve it in well closed containers. It is in the form of irregular pieces, liver-brown when freshly made, changing to a greenish yellow and finally to gray through absorption of moisture, oxygen and carbon dioxide from the air."

It is apparent from this description that sulphurated potassa is a very uncertain mixture, and one which may not serve its purpose satisfactorily unless reasonably fresh. In the preparation of the lotion, using fresh sulphurated potassa, the following equation may represent the reaction which takes place:

$$ZnSO_4 + K_2S_2 = ZnS + S_2 + K_2SO_4.$$

This sulphur in a finely divided state is the effect desired by the prescriber. Using sulphurated potassa which has decomposed, this result will be only partially attained, if at all, for as its decomposition and oxidation proceeds, the quantity of sulphidic sulphur decreases.

The pharmacist who is desirous of dispensing what is wanted has two alternatives. He can either buy the sulphurated potassa in small quantities and "preserve it properly" or he can make it freshly as needed. Buying in small lots may not solve the difficulty, for much of it is already partially decomposed when purchased. It may be made as directed in N. F. III, by gradually heating a mixture of 2 parts of dried potassium carbonate and 1 part of sublimed sulphur in a covered crucible, not over half filled, until the mass ceases to foam and is perfectly fused. Pour on a cold slab and when cool break into pieces and keep in a well-stoppered bottle. This small scale manufacturing, while not difficult, requires a certain technique. Properly it should be done under a flue or in the open air, unless the fusion is controlled carefully as to the temperature, when it may be carried out in the store without noticeable vitiation of the air.

In order to avoid the use of sulphurated potassa of uncertain age and quality and also to eliminate making it freshly by fusion, the following procedure is suggested as giving an end product possessing those characteristics which are found in "White Lotion" made from fresh sulphurated potassa.

A. Sublimed Sulphur	3 Gm.
Solution of Potassium Hydroxide U. S. P.	50 cc.

To the sulphur contained in a mortar, add the KOH solution in small quantities and triturate until a paste is formed. Rinse into a 150 cc Erlenmeyer flask with the rest of the KOH solution, finishing the rinsing with about 10 cc of water. Heat until the sulphur is dissolved

* Read before Pennsylvania Pharmaceutical Association, 1922.

[1] Technical Chemistry Laboratory, Philadelphia College of Pharmacy and Science, June 19, 1922.

[2] JOURNAL A. PH. A., Vol. 3, P. 692.

and the solution is of a deep red-brown color, avoiding unnecessary and long boiling. Filter at once.

B. Zinc sulphate U. S. P.....5 Gm.
Water, or Rose water..... 60 cc
Dissolve and filter if necessary.

C. Mix solutions A and B, and add sufficient water or rose water to make 125 cc.

The lotion thus made will equal, in physical appearance, any preparation made from freshly prepared sulphurated potassa, and will agree closely in the kind and quantity of constituents. It will certainly be more presentable and efficient than any made from sulphurated potassa of doubtful polysulphide strength.

Chairman J. Leon Lascoff submits the following formula of

Salicylated White Lotion
Acid Salicylic
Sulphurated Potassa
Zinc Sulphate
Acacia, powdered, of each 4 Gm.
Rose Water to make 120 cc.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter. To maintain its activity and representation each Branch should see that at least three of its meetings during the year are reported in the JOURNAL.

CINCINNATI.

The Cincinnati Branch of the A. Ph. A. elected the following officers for the ensuing year: *President* Fred W. Kisker; *1st Vice-President*, Caswell A. Mayo; *2nd Vice-President*, Fred J. Minsterketeer; *Secretary-Treasurer*, Miss Bertha Ott. E. V. Kyser, of Covington, Ky., was elected to fill a vacancy on the executive committee, and C. P. T. Fennel was elected council representative to the parent association.

The annual outing of the Cincinnati Branch of the American Pharmaceutical Association, was held at Riverside park, Milford, on Wednesday, July 12th. There were the usual games, dancing, cards, etc. One of the amusing features of the day was a baseball game between teams one of which was composed of women and the other of men. It is reported that the women made 18 home runs and won the game. Louis Werner, D. E. Murphy, Charles G. Merrell and Caswell A. Mayo constituted the Committee on Entertainment.

INDIANAPOLIS.

Although the extreme heat interfered some in the attendance, a very enjoyable and enthusiastic meeting of the Indianapolis Branch was held July 27th at the Chamber of Commerce.

Prof. Edward H. Niles of the Indianapolis College of Pharmacy was the first speaker and had for his subject: "The Fallacy of Drug Store Experience as a legal requirement for Registration." The discussion following indicated an unusual interest, and while at the beginning quite a few differed from the speaker, at the conclusion of the discussion all agreed with him and the Secretary was instructed to send the paper, as completed, to the JOURNAL.

The second speaker was Irvan E. Taylor of Broadripple, on "Ointment Potassium Iodide, past, present and future." This was thoroughly discussed and the Secretary requested to also send this paper to the JOURNAL.

The Executive Committee reported that a very good program had been outlined for several months ahead, every number being interesting and a variety of subjects. As the Association has many active members outside of Indianapolis who have asked for a meeting in other cities, the Secretary was requested to confer with these members and, if possible, arrange for some meetings outside of Indianapolis.

The best wishes of the Branch were extended Mr. A. D. Thorburn of the Executive Committee, who expects to spend several months abroad. Mr. Thorburn promised to report his observations in the Pharmaceutical Line of foreign countries on his return.

ERNST STAHLHUTH, *Secretary.*

THE DEPARTMENT OF THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES

[EDITOR'S NOTE: Whether or not we are moving too rapidly in advancing the requirements in pharmacy is still a subject of debate by some. At New Orleans Dean Frederick J. Wulling of Minnesota gave a brief paper in which he pointed out the trend of modern education. The paper is printed herewith in order that all pharmacists may be aware of what is occurring in all professions and what the tendency is in some institutions.

RUFUS A. LYMAN,
Chairman Executive Committee and Conference Editor.]

A COMMON FRESHMAN YEAR FOR ALL STUDENTS ENTERING PROFESSIONAL COLLEGES.

BY FREDERICK J. WULLING.

A number of universities are seriously considering the establishment of a common freshman year, with a more or less limited curriculum restricted to subjects of an academic and cultural nature, the completion of which is to be the minimum prerequisite for entrance upon professional courses. Yale University already has such a freshman plan, but unfortunately Yale has no college of pharmacy in its composition.

The Conference ought to take sympathetic notice of this movement which points the direction in which pharmaceutical education will move with other professional education. The universities are beginning to realize that if a few of the professions, notably medicine, education, dentistry and law, find it desirable and profitable to require some academic college training of their matriculants, every reason exists why all professions should have such a requirement. The professions themselves are stimulating, though not vigorously, increased academic and cultural training of new entrants. Pharmacy certainly cannot stand aside and be outclassed. This Conference should do everything possible to keep pharmacy in line in all upward educational movements.

In the University of Minnesota, and the same is approximately true of other similar universities, over sixty percent of all freshmen, including those preparing for medicine, law, education, dentistry, and business are enrolled in the College of Science, Literature and the Arts; sixteen percent are in the Engineering School, eleven percent in the School of Agriculture, Forestry and Home Economics and four percent in each of the Departments of Pharmacy, Mines and Chemistry. Under the proposed plan all entering freshmen could be segregated under one faculty. All freshmen could be grouped into three classes; one preparing for the Colleges of Science, Literature and the Arts, Law, Education and Business, another preparing for the Schools of Medicine, Dentistry and Pharmacy, and the third preparing for the Schools of Engineering, Architecture, Chemistry and Mines.

The primary purpose of the proposed freshman year is to provide for the students of all professions a broader education and outlook upon life, to acquaint them with the aims and purposes of the university as a public service institution, and to familiarize them with the nature of the various professional schools, and with the work and scope of the professions for which these schools prepare men and women, thus fitting them to give better service in their chosen fields of work.

To carry out the proposal would require the organization of a university freshman teaching staff, to administer freshman academic work coördinated with and leading to the professional or technical work of the existing colleges. It would also require the registration of all entering students in the university rather than in the separate colleges. Promotion would be from the university into the colleges at the end of the freshman year.

As to curriculum it would probably be undesirable or unwise to force all freshmen to follow one fixed curriculum, but there should be a restriction of electives. At present rhetoric is quite generally required of freshmen in all colleges. This and a modern language and an orientation course could be made a fixed part of the year's work, the balance to be electives from a restricted group of subjects.

Many academic colleges already have divided or are thinking of dividing their regular four-year courses leading to the degree of B.A., and B.S. into the junior college and the senior college, the former embracing the first two years and the latter the last two years of the four years required for the academic degree selected. It has been proposed that instead of creating or segregating a special freshman faculty, the proposed common freshman year be administered by the junior college. This idea is favored especially by those, myself among them, who feel that before long all professions will require a minimum of two years of academic professional work and that graduation from the junior college will then become the logical prerequisite to entrance upon professional courses. Medicine, law and education now require completion of the junior college work for entrance. The tendency is toward the same requirement for all professions.

Heretofore the professions have themselves determined their educational standards. These standards have always varied too much, because, I believe, they were fixed, in a large measure at least, by those who were not adequately qualified by training, perception and outlook to do so. The wholly qualified have always been with us and have pointed the way, but they have always been in the minority and their proposals have as a rule had slow growth. The world is entering the age of specialization and is profiting greatly thereby. There are now specialists in the administration of education. Many of these are in power and are fixing standards according to a broad and liberal view based upon extensive and competent study and investigation of what is best for society at large, as well as for those most immediately concerned. These specialists include pharmacy in their deliberations and study. They are fair and therefore cannot possibly say that pharmacy is not a most responsible calling and does not need well-educated practitioners.

If the universities will establish the proposed common freshman year, the question of pharmaceutical prerequisite will be settled and settled right for all time. There is still time for pharmacy itself to establish proper educational standards. This Conference, the National Association of Boards of Pharmacy, and the American Pharmaceutical Association ought to combine and take such action as will forestall action outside of pharmacy. Notice should be taken of the fact that among the latter are not only the universities, but also such states as are creating more specialized and powerful educational departments, which are establishing higher standards of education for the practice of the professions.

UNIVERSITY OF MINNESOTA.

BIBLIOGRAPHY OF PHARMACEUTICAL RESEARCH

Conducted by H. V. Arny, Reporter on the Progress of Pharmacy, Chairman of the Committee on Research.

On these pages, each month, will be found a list of articles on pharmaceutical research; the list appearing a certain month will record articles appearing in American journals of the preceding month and articles appearing in foreign journals will be recorded as quickly as possible after the journals reach the Reporter.

All articles appearing in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK which will be issued as soon after the end of the year represented as editing and printing conditions permit. Those desiring abstracts immediately can obtain same for a fee of one dollar each by communicating with H. V. Arny, 115 West 68th St., New York, and arrangements can also be made for securing photographic reproductions of entire articles at moderate prices when such are desired.

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COUNCIL BUSINESS

A. PH. A. COUNCIL LETTER NO. 16.

(Concluded from p. 577 July issue.)

86. Election of active members: No. 358, Ralph Kitzmiller, Anchorage, Alaska; No. 359, Herman L. Gentsch, Anchorage, Alaska; No. 360, Reuben E. Burrin, c/o Kiefer-Stewart Co., Indianapolis, Ind.; No. 361, Mabel Barnhill, Bethel, N. C.; No. 362, Louis J. Auerbacher, 15 Park Row, New York City, N. Y.; No. 363, Alfred J. W. LeBien, Lincoln, Kans.; No. 364, Frona Alice Drumm, 419 North Spruce, Stockton, Kans.; No. 365, Robert Stanley Jones, Murray, Ky.; No. 366, Emma Warrener White, 318 N. 6th Street, Hopewell, Va.; No. 367, Fred E. Call, Painter Hotel, 3787 Jeff. E., Detroit, Mich.; No. 368, David Russell Scott, 3390—15th St., Detroit, Mich.; No. 369, Eugene William McLaughlin, 5912 Baldwin St., Detroit, Mich.; No. 370, John William Reed, Goodland, Kans.; No. 371, Louis H. Arensberg, Goodland, Kans.; No. 372, Charles E. West, c/o Riedel & Co., Inc., 104 So. 4th St., Brooklyn, N. Y.; No. 373, George Henry Bruehler, 815 Jefferson Ave., Cleveland, Ohio; No. 374, C. W. Hill, Buckeye, Ohio; No. 375, Charles F. Kutscher, 533 Second St., Braddock, Pa.; No. 376, Albert Goodman, 618 Alice St., Youngstown, Ohio; No. 377, Robert Henry Glett, 416 Mallers Bldg., Chicago, Ill.; No. 378, Edward Joseph Steinmetz, Cresco, Iowa; No. 379, Henry C. Deichmiller, 1535 Lake Ave., Rochester, N. Y.; No. 380, Meyer Sambur, 550 Bushwick Ave., Brooklyn, N. Y.; No. 381, Jacob Seley, 1091 Manhattan Ave., Brooklyn, N. Y.; No. 382, Henry A. Vogt, 85 Main St., White Plains, N. Y.; No. 383, Philip Blank, 310 Ashford St., Brooklyn, N. Y.; No. 384, J. W. Wuppermann, 12 East 46th Street, New York, N. Y.; No. 385, Nelson Smith Kirk, 168 Rutledge St., Brooklyn, N. Y.; No. 386, Nathan Weiss, 1462—5th Ave., New York, N. Y.; No. 387, Abraham Weisbrod, 2117—8th Ave., New York, N. Y.; No. 388, Gustave Napoleon, 201 Mott St., Trenton, N. J.; No. 389, Alfred Payson Churchill, 5611 Euclid Ave., Cleveland, Ohio; No. 390, Abraham H. Kramer, 55 Beaumont St., Brooklyn, N. Y.

A. G. DUMEZ, *Secretary.*

A. PH. A. COUNCIL LETTER NO. 17.

(Abstract.)

WASHINGTON, D. C., July 12, 1922.

To the Members of the Council:

87. Program for the Cleveland meeting.—Adopted as presented in Council Letter No. 16

88. Applicants No. 358–390 inclusive, have been elected to active membership.

89. Election of new members. No. 391, Gordon Bennett Merten, Villa Ridge, Mo.; No. 392, Solomon Barsel, 150 Willow St., Bloomfield, N. J.; No. 393, Charles Edward Fanslau, 68 Tracy Ave., Newark, N. J.; No. 394, Samuel W. Gaidemak, 406 Hunterdon St., Newark, N. J.; No. 395, Mario Martucci, 189 West Springfield St., Boston, Mass.; No. 396, Ruth Burdett, 10 Florence St., Wollaston, Mass.; No. 397, Antoine Edward Greene, 33 Willard St., Cambridge, Mass.; No. 398, Morris Stone, 54 Chambers St., Boston, Mass; No. 399, Charles Arthur Pederzoli, 16 South Bow, Milford, Mass.; No. 400, Clarence Murray Kennelty, 494 Center Ave., Verona, Pa.; No. 401, Francis Edward Bradley, 7520 Susquehanna St., Pittsburgh, Pa.; No. 402, Sister M. Berchmans Shields, Mercy Hospital, Pittsburgh, Pa.; No. 403, Joseph Bernstein, Jr., 1526 Seventh St., Washington, D. C.; No. 404, Theresa Freud, Water & Bridge Sts., S. Brownsville, Pa.; No. 405, Louis Cotter Gicquelais, 5041 Second Ave., Pittsburgh, Pa.; No. 406, Anna Bee Haller, Forreston, Ill.; No. 407, George Louis Webster, 6326 Kenwood Ave., Chicago, Ill.; No. 408, Julius Lorentz Bredahl, 114½ E. Washington St., Iowa City, Iowa; No. 409, Leroy A. Lallance, Jr., Ohio Valley Drug Co., Wheeling, W. Va.; No. 410, Wm. J. Beyermann, 4751 W. Adams St., Chicago, Ill.; No. 411, J. Hubert B. Deuster, 1279—6th St., Milwaukee, Wis.; No. 412, Darwin Romanes Turner, 608 E. 37th St., Chicago, Ill.; No. 413, William Henry Gilliland, 133 West 10th St., Norfolk, Va.; No. 414, Charles P. Butler, Rivermont Pharmacy, Lynchburg, Va.; No. 415, S. G. Miller, Purcellville, Va.; No. 416, Samuel C. Brooks, Purcellville, Va.; No. 417, Luther G. Stiff, Stiff's Pharmacy, Roanoke, Va.; No. 418, J. M. Long, c/o Massie and Long, Lynchburg, Va.; No.

419, A. J. Clarke, Crozet, Va.; No. 420, R. C. Parsons, Pennington Gap, Va.; No. 421, E. C. Mathews, Temperanceville, Va.; No. 422, Albert A. Curran, 658 W. Barre St., c/o Allans Pharmacy, Baltimore, Md.; No. 423, Charles F. Serodino, Main & Sherman Sts., Norwood, Ohio; No. 424, Louis Wolfson, 201 Summer St., East Boston, Mass.; No. 425, Vernon J. Hobson, 507 W. Railroad St., Independence, Kansas; No. 426, George James Munck, Melrose, Minn.; No. 427, Hugo Arthur Kohl, Lenora, Kansas; No. 428, William John Kirsch, 4917 Broad St., Pittsburgh, Pa.; No. 429, Elmer John Traut, New Athens, Ill.; No. 430, Nathan Green Edelblute, 505 West St., Topeka, Kansas.

A. G. DuMez, *Secretary.*

COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON DRUG MARKET.*

In preparing a report of this character it is frequently a question in the minds of those having the matter in charge whether it is of interest to any one but an analyst, or those actually engaged in purchasing for large scale manufacturing or for re-sale. There is, however, no question as to the value of the rigid scrutiny to which medicinal products are continually subjected and it may be that the average member of the profession is fully satisfied as he knows that the chemists of the federal, state and local governments as well as those of the manufacturing and wholesale establishments are on guard. Reports of this kind are necessarily given from an analytical viewpoint and are really a tabulation of the work of the chemist and botanist whose experiences have fitted them for the task of examining and detecting spurious, adulterated or sub-standard products.

It is the aim of your committee to give information of value and interest and, also, to make the report as concise as possible without detracting from its value; for this reason we do not comment on those articles that were of standard quality, or those that were only slightly below standard, as this purpose is served in a general review of the situation. The products commented upon are only a small part of the work done by the contributing laboratories and are the results of first-hand information obtained by or under the direct supervision of the members of the committee. In addition to our usual report, we are, this year, giving the results of physiological assays of numerous drugs and also results obtained on the "weight of unit volume," method for the valuation of the quality of various drugs.

In reviewing the data obtained from various sources we find that the situation is accurately described by Mr. Slothower who states as follows:

"Considering the economical and industrial unrest during the past year, we find upon analysis of our reports of examinations of medicinal substances made during the past year a general trend toward normalcy.

"With the foreign economical conditions still in a turmoil, it is surprising to find the quality of imported medicaments generally up to standard.

"In fact, the imported crude drugs can be given a better quality rating than the domestic drugs upon analysis of this report.

"The analyses of chemicals during the past year have been generally satisfactory, and can be reported an improvement over recent years."

As usual there were a number of adulterated or spurious shipments and samples received such as a specie of *Jeffersonia* that was submitted as blue cohosh; a specie of cascarilla bark for cinchona and our old friend *acer spicatum* for cramp bark. Two spurious samples of manaca and a number of adulterants of scutellaria were also detected. It was also found that Bermuda grass is still being offered as triticum. The most prevalent instance of adulteration is that of castile soap in which foreign oil has been substituted for olive oil in its manufacture. A sample of reduced iron was proven to be iron filings. The shipper in this case was evidently acting on the theory that iron in any form is just simply iron.

Several instances of articles of very poor quality were noted; such as a lot of rumex that contained an excess of stems and was wormy; a shipment of lappa that was wormy and decayed, and some orange peel that was dirty and mouldy. These cases are unwarranted and can be remedied by proper handling and storing.

* Pennsylvania Pharmaceutical Association, Buena Vista Springs, 1922.

In the realm of chemicals: glacial acetic acid, anhydrous sodium hydrosulphite, sodium acetate, and sodium cacodylate are instances of noticeably low standard articles.

Custom and ignorance are sometimes responsible for many rejections. In the case of a lot of verbena it was found that the seeding instead of the flowering tops were submitted. Yerba Santa was unacceptable because it had been gathered too late in the season and in the case of galega the entire herb was collected instead of only the following tops.

Instances of carelessness that are occasionally encountered were noted in a shipment of iron arsenite and ammonium citrate that was proven to be plain iron arsenite and a shipment of calcium glycerophosphate that was labeled sodium glycerophosphate.

The following material covers the period from June 1, 1921, to June 1, 1922, and was taken from the analytical files of the H. K. Mulford Co., the LaWall, and the Smith, Kline & French Company laboratories.

ACID ACETIC GLACIAL: One lot was rejected because of a reddish brown color caused by the presence of iron as an impurity. G. A. SLOTHOWER.

ACID ACETYLSALICYLIC: This substance was subjected to the usual critical tests with the result that a number of undesirable packages and samples were rejected. A number of samples submitted by brokers were found to contain free salicylic acid; two of them were of quite undesirable quality, as, in addition to a pronounced amount of free salicylic acid, they had a distinct yellowish color and an abnormal odor.

It was not found necessary to reject any full shipments but only certain packages which were not satisfactory in regard to color or odor. It is interesting to note that in the many shipments examined the contents of only one barrel contained free salicylic acid. A new condition observed was the presence of brownish specks which gave a reaction for free salicylic acid.

J. G. ROBERTS.

ACID HYPOPHOSPHOROUS: One sample assayed 28.6% acid, whereas the U. S. P. standard is not less than 30% nor more than 32%. A trace of sulphates was detected in this sample. M. D. STICKLE.

ACID PHOSPHORIC: One carboy complied with all of the U. S. P. tests but it was unacceptable because of its crystalline condition. This is a distinct disadvantage in handling, as it would require heat to dissolve the crystals each time they were formed. J. G. ROBERTS.

ALCOHOL: Of the numerous samples that were examined but two were found that complied with all the U. S. P. tests, particularly the aldehyde tests. J. W. E. HARRISSON.

ALCOHOL—ABSOLUTE: One sample answered all the U. S. P. tests except for the slight presence of organic impurities. G. A. SLOTHOWER.

ALBUMIN: A number of samples were examined, two of which had apparently been ground at a rather high rate of speed as their solubility was appreciably decreased.

J. W. E. HARRISSON.

ALUM—AMMONIUM: A trace of iron was present in one sample which passed all other U. S. P. tests. FRED GLOOR.

AMBERGRIS: Of the two samples examined one was genuine although it was of no commercial value. The other sample was an impure paraffin. J. W. E. HARRISSON.

ASAFOETIDA: The nine lots examined assayed 66.52%, 71.76%, 62.34%, 49.25%, 67.64%, 67.41%, 70.7%, 53.83% and 40.77% alcohol-soluble matter. G. A. SLOTHOWER.

ASAFOETIDA: Of the numerous samples tested fifty percent were rejected on account of excessive ash and alcohol-insoluble matter. One sample contained 44.8% ash and 67% of alcohol-insoluble matter. J. W. E. HARRISSON.

BALSAM COPAIBA PARA: The following results were obtained on one lot:

Appearance.	Thin and turbid.
Specific gravity at 25° C	0.929
Residue after evaporation on water-bath	25.65%
Acid number	23.75
Gurjun balsam	none
Boiling point of volatile oil	244.7° C.
Optical rotation of volatile oil	20.07°

Sample was rather thin and cloudy and was not of U. S. P. quality. It had a low specific gravity, contained an insufficient amount of nonvolatile matter and had a low acid number and boiling point. The test for the detection of paraffin oils gave an abnormal result but was not conclusive. J. G. ROBERTS.

BALSAM PERU: One sample passed all the U. S. P. standards except its acid number of 96. The U. S. P. maximum limit for acid number is 84. FRED GLOOR.

BELLADONNA LEAVES: Three lots were assayed and none were found to be below the U. S. P. standard. J. W. E. HARRISSON.

BENZOIN: The twelve samples examined were soluble in alcohol to the following extent: 69.24%, 70.12%, 69.6%, 67.9%, 67.2%, 67.4%, 68.4%, 70.44%, 78.3%, 70.1%, 73.5% and 62.9%. The U. S. P. requires not less than 75% alcohol-soluble constituents. The total ash of these samples ranged between 1.3% and 1.93%. K. SUTO.

BISMUTH BETANAPHTHOL: One sample exceeded the limit of 1% free betanaphthol allowed by the U. S. P. The analysis showed the presence of 1.95%. FRED GLOOR.

CAFFEINE ALKALOID: The moisture content of three samples was 6.1%, 6.5% and 5.7%, respectively. K. SUTO.

CALCIUM CARBONATE—PRECIPITATED: A sample submitted by a broker was 2.5% low in strength and contained an excess of acid insoluble matter. J. G. ROBERTS.

CALCIUM GLYCEROPHOSPHATE: Labeled as calcium glycerophosphate one sample on chemical examination proved to be sodium glycerophosphate. M. D. STICKLE.

CALCIUM LACTATE: One lot was not of U. S. P. quality as it was 8% low in strength and was about 13% deficient in water. J. G. ROBERTS.

CAPSICUM: Though a number of samples were found which did not have an excess of ash and sand most samples were rejected on that account. J. W. E. HARRISSON.

CARAMEL: Two lots were of N. F. quality except for solubility in diluted alcohol. In this connection the N. F. states that caramel "is soluble in diluted alcohol but is precipitated when the alcoholic content of the solution is increased to 80% or more." The samples were soluble in diluted alcohol, but in one case the precipitation occurred when the alcoholic content reached 55% and in the other when it reached 65%. This feature is not objectionable except where the caramel is used in alcoholic solution of that strength or over. J. G. ROBERTS.

CARDAMOM: Of several lots examined two were found to have an excess of sand. J. W. E. HARRISSON.

CATECHU: The alcohol solubility of one sample was 92.5%; this amount is well within the British Pharmacopoeia standard of 80%. MISS M. MOFFAT.

CAULOPHYLLUM: A spurious sample submitted for the official drug appeared to be a specie of *Jeffersonia*. G. A. SLOTHOWER.

CHLORINATED LIME: One sample assayed only 27.7% of available chlorine, whereas the U. S. P. standard is not less than 30%. MISS M. MOFFAT.

CIMICIFUGA: Badly worm eaten and partially decayed rhizomes were found present in an inferior sample of this drug. G. A. SLOTHOWER.

CINCHONA BARK: The microscopical examination of a sample of cinchona submitted for the official drug proved to be a specie of cascarilla bark. Alkaloids could not be isolated from the sample. G. A. SLOTHOWER.

COCAINE HYDROCHLORIDE: Tests indicating the presence of cinnamylcocaine and isatropyl-cocaine were obtained with one sample. J. G. ROBERTS.

COCHINEAL: One sample gave a total ash content of 24.9% and a correspondingly poor tinctorial power. G. A. SLOTHOWER.

COLOCYNTH: Nine percent of seeds were found in a sample of this drug which did not meet the U. S. P. purity standard of not more than 5%. G. A. SLOTHOWER.

COLORS, DYES: Heavy metals in excess of U. S. P. limit are frequently present in dyestuff. Iron is the chief offender. FRED GLOOR.

CORPUS LUTEUM: The total ash yields of four samples were 5.1%, 6.48%, 9.69%, and 3.12%, respectively. The microscopical and chemical examinations of one sample showed a slight amount of talcum which was most likely present as an accidental contamination. G. A. SLOTHOWER.

CRAMP BARK: The botanical examination of one sample labeled "True Cramp Bark"

proved it to be a specimen of *Acer spicatum*. An excessive amount of adhering wood was present in each of the two other samples. G. A. SLOTHOWER.

CRESOL: The rejection of two lots was advised because they contained an excess of hydrocarbon. J. G. ROBERTS.

DIACETYLMORPHINE: One sample had a melting point of 228.5° C. and contained a trace of morphine. K. SUTO.

DIGITALIS: Cultivated varieties of digitalis of U. S. P. quality are found in the commercial market. As a result of a conversation with Prof. Heber W. Youngken, we are of the opinion that the new Pharmacopoeial definition should be phrased to include these varieties. G. A. SLOTHOWER.

ELEMI GUM: The alcohol-soluble content of one sample was 99.02%. G. A. SLOTHOWER.

FENNEL: One lot was rejected on account of an excess of foreign matter. J. W. E. HARRISSON.

FORMALDEHYDE, SOLUTION: Considerable trouble was had with this product during the past year, as it was necessary to reject several lots; some lots were decidedly yellow while others had become polymerized. J. G. ROBERTS.

FULLER'S EARTH: The loss on ignition of three samples was 9.3%, 7.01% and 12.03%, respectively. H. J. FARLEY.

GALEGA: One sample submitted was found to be the entire herb, whereas the "flowering tops" are desired. G. A. SLOTHOWER.

GLYCERIN: Carbonizable impurities were present in excess in one sample. All other U. S. P. requirements were satisfactory. J. J. FARLEY.

HYDRASTIS: 2.75% of ether-soluble alkaloids were found in one lot. J. G. ROBERTS.

IRON, REDUCED: Practically all, of the reduced iron examined contained sulphides in excess of the U. S. P. allowance, but it answered all other U. S. P. requirements. FRED GLOOR.

IRON, REDUCED: One lot examined proved to be iron filings. J. W. E. HARRISSON.

IRON ARSENITE AND AMMONIUM CITRATE: The chemical examination of a lot of iron arsenite and ammonium citrate proved it to be iron arsenite. J. J. FARLEY.

KINO: The alcoholic extractive of four samples examined were 51.66%, 29.3%, 43.2%, and 30.51%, respectively. The U. S. P. standard allows not less than 45% of alcoholic extractive. Only one sample was equal to the official standard. K. SUTO.

KINO: One lot was of rather poor quality as shown by the following results:

	Sample.	U. S. P. Standards.
Moisture	13.47%	not more than 12%
Ash	6.00%	not more than 3%
Alcohol-soluble matter	34.80%	not less than 45%
Boiling water-soluble matter	32.72%	not less than 40%

J. G. ROBERTS.

LAPPA: Two samples were badly worm eaten and showed considerable decayed portions. G. A. SLOTHOWER.

LICORICE, POWD. EXT.: Of the two lots examined one was rejected on account of a high ash content. J. W. E. HARRISSON.

LITMUS: The azolitmin content of two lots was found to be respectively 18.5% and 17.95%. Litmus contains several coloring matters of which azolitmin is the most important. The method employed in the examination is that given in the "National Standard Dispensatory" which states that the proportion of azolitmin found in seven commercial samples averaged 4.6%, except in two cases in which it reached 13.3% and 14.1%, respectively. The azolitmin found in these samples is more than we have found in any previous sample. J. G. ROBERTS.

MANACA: Two spurious samples of this root have been submitted during the past year. They were fusiform in shape and did not respond to the organoleptic tests given in authoritative works. G. A. SLOTHOWER.

MACE: Excessive amounts of ash were found in two of the twenty samples examined. J. W. E. HARRISSON.

MAGNESIUM OXIDE: Both samples examined were rejected because of their high calcium content. J. W. E. HARRISSON.

MARJORAM: No adulteration was evident in any of the samples examined.

J. W. E. HARRISSON.

MYRRH.

Sample no.	Percent alcohol soluble.	Percent ash.
1	33.73	11.47
2	60.50	5.94
3	39.15	4.35
4	34.08	3.65
5	21.27	4.20
6	44.00	4.05
7	37.05	3.37
8	25.92	8.30
9	34.26	5.91
Average	36.66	5.69
Standard	35.00	8.50

In addition, twenty other samples gave an average alcohol-soluble extractive of 38.26%. The alcohol extractive content ranged between 28.6% and 59.8%.

K. SUTO AND G. A. SLOTHOWER.

MAGNESIUM OXIDE—LIGHT—CALCINED: An examination of two lots showed that they were decidedly sub-standard as they were low in strength and contained excessive amounts of water and calcium oxide. One lot was only 93% strength and contained 20.4% of water and 2.66% of calcium oxide. The other lot was only 1% low in strength but contained 6.5% of calcium oxide and 15.8% of water. J. G. ROBERTS.

OIL OF BIRCH: As on other occasions it has been necessary to reject samples of oil of birch which were considered of suspicious quality because they did not give positive results with identity tests.

One lot contained strong traces of copper. J. G. ROBERTS.

OIL, OLIVE: There appeared to be a great variation in the quality of this oil. While a few adulterations with cottonseed oil were noted, by far the most annoying factors were the high acid numbers. One sample contained 11.0% of acid as oleic acid and many of them ran between 6% and 10% of free acid. J. W. E. HARRISSON.

ORANGE PEEL, SWEET: One lot of this drug was rejected because it was dirty and mould infested. G. A. SLOTHOWER.

PEPPER, BLACK, WHITE AND RED: A great many samples of these spices were examined and but few rejected. J. W. E. HARRISSON.

PERSIO: Every lot of cudbear examined during the past year answered all the N. F. requirements and yielded the following amounts of ash 10.19%, 5.5%, 20%, 3.9%, 10.8%, 7.9%, 9.7%, and 10.49%. M. D. STICKLE.

PETROLATUM, LIQUID: The usual excellent quality of this product was not maintained as it was found necessary to reject some lots because of odor and taste. Liquid petrolatum for internal use should be water-white, free from "bloom" and without odor and taste.

J. G. ROBERTS.

POTASSIUM BITARTRATE: Of several samples examined one was rejected on account of a large amount of insoluble matter. J. W. E. HARRISSON.

QUEBRACHO: The commercial drug when of correct botanical origin and practically free from adhering wood fails to meet the arbitrary standard of 1% total alkaloids.

G. A. SLOTHOWER.

RAGWEED PROTEIN: The microscopical examination showed the product consisted of approximately 50% whole pollen grains. PETER MASUCCI.

RESIN OF PODOPHYLLUM: The ether-soluble content of two samples was 78.33% and 74.92%. The total ash yield of one sample was 0.83%. G. A. SLOTHOWER.

RESIN OF PODOPHYLLUM: Two lots were of U. S. P. quality except that they were not as soluble in alcohol as required by the U. S. P., which states that Resin Podophylum "is soluble in alcohol with but a slight opalescence." This is the usual condition however as samples from various sources have contained from 0.4% to 3% of alcohol-insoluble matter. J. G. ROBERTS.

RUMEX: A very poor lot of *Rumex obtusifolius* was rejected because of the presence of excessive stem bases; over 50% of the roots were worm eaten. G. A. SLOTHOWER.

SCUTELLARIA: The recent examination of six samples showed only three to be of correct botanical origin. One sample was contaminated with approximately 50% of *Scutellaria canescens*. Another sample proved to be a specimen of spurious pennyroyal, *Trichostema dichotomum*, while another has not been identified. G. A. SLOTHOWER.

SODIUM ACETATE: A number of samples were examined which met the U. S. P. tests; two samples, which were supposedly anhydrous, contained 27% and 28.5% respectively of water. J. W. E. HARRISSON.

SOAP CASTILE: Evidence of the use of a foreign oil in the manufacture of one sample was shown when it had an iodine number of only 47.15 whereas the U. S. P. requires 84 to 90. J. G. ROBERTS.

SOAP CASTILE: Four lots were examined and all complied with the U. S. P. tests except the iodine number of the fatty acids. But one sample met this requirement indicating that most of the soaps were made of some other oil than olive. J. W. E. HARRISSON.

SODIUM CACODYLATE: The acidity of one sample was nearly three times in excess of the U. S. P. limit. A trace of calcium was found in two other samples. F. J. KEENAN.

SODIUM HYDROSULPHITE: The chemical analysis of one commercial sample showed the presence of only 25% sodium hydrosulphite. Commerical grades of this chemical generally assay about 82% of sodium hydrosulphite. MISS M. MOFFAT.

SQUAW VINE: A small amount of wintergreen herb, most likely the result of careless collecting was present in one lot of this drug. G. A. SLOTHOWER.

STYRAX: The eight lots examined yielded the following results:

Sample labeled.	Ash percent.	Insoluble matter percent.	Non-volatile alcohol soluble matter percent.	Acid value.	Saponification number.	All other U. S. P. requirements.
1 artificial	..	...	...	156.9	.....	Odor poor
2	0.15	4.05	92.0	81.88	174.16	O. K.
3	0.1	3.64	87.73	49.27	189.92	O. K.
4	5.34	9.56	66.70	107.84	189.62	O. K.
5	1.95	6.14	69.49	108.2	.....	O. K.
6	..	4.38	64.83	119.02	192.28	Odor poor
7	4.5	8.028	74.36	89.7	72.3	O. K.
8	4.72	6.83	72.56	78.12	10.5	.....
U. S. P. Requires	1	2.5	60.0	56–85	170–230	Resinous odor

TERPIN HYDRATE: One sample had a decided odor of turpentine and its saturated hot aqueous solution was acid to litmus. MISS M. MOFFAT.

TINCTURE IODINE: Of the twelve samples examined two were found to be deficient in iodine and potassium iodide. J. W. E. HARRISSON.

TRITICUM: Bermuda grass is continually being offered for the official drug. G. A. SLOTHOWER.

TURPENTINE: Considerable wood, in the shape of fine chips, was present in one sample. G. A. SLOTHOWER.

VERBENA: One lot of this drug represented the dried over-ground portion of plants that had gone to seed, whereas, the N. F. requires its collection during the flowering period. G. A. SLOTHOWER.

WAHOO BARK: One sample contained 60% of roots and rootlets and was therefore grossly inferior to the N. F. standard "of not more than 3% of wood or other foreign matter." J. G. ROBERTS.

WHITE WAX: One sample passed all the U. S. P. requirements except the ester value 81.1, which exceeded the U. S. P. maximum ester value of 79. FRED GLOOR.

WINE: A number of samples imported and supposed direct from government bond were

examined. All contained an excess of sulphates, indicating that they had been plastered.

J. W. E. HARRISSON.

YERBA SANTA: One lot contained a considerable amount of a grayish brown colored leaf and lacked the agreeable aromatic odor of eriodictyon. The specimen did not prove to be one of *E. tomentosum* as the botanical and microscopical examinations showed it to be of correct origin. The physical differences were probably due to its having been collected late in the season.

G. A. SLOTHOWER.

The following table shows the results of chemical assays of 96 crude drugs made in the Analytical Department of the H. K. Mulford Company, during the year June 1, 1921 to June 1, 1922.

Drug.	No. of samples.	Lowest assay percent.	Highest assay percent.	Average percent.	Standard.		Number. Above.	Below.
Belladonna leaves	16	0.290	0.55	0.418	0.3%	Alkaloids	15	1
Belladonna root	3	0.438	0.50	0.464	0.45%	Alkaloids	2	1
Cantharides, Chinese	4	0.38	1.02	0.821	0.6%	Cantharidin	3	1
Cinchona, red	5	4.74	9.46	7.2	5.%	Alkaloids	3	2
Cinchona, yellow	9	3.66	8.58	6.2	5.%	Alkaloids	7	2
Colchicum corm	8	0.214	0.48	0.372	0.35%	Colchicine	5	3
Colchicum seed	1	0.69	0.69	0.69	0.45%	Colchicine	1	0
Conium seed	4	0.58	0.84	0.689	0.5%	Conine	4	0
Hydrastis	6	2.62	4.33	3.56	2.5%	Alkaloids	6	0
Hyoscyamus	15	0.0378	0.099	0.0607	0.065%	Alkaloids	7	8
Ipecac	3	2.43	2.53	2.48	1.75%	Alkaloids	3	0
Kola nuts, dried	1	1.84	1.84	1.84	1.5%	Caffeine	1	0
Nux vomica	13	2.44	3.01	2.71	2.5%	Alkaloids	12	1
Opium, powdered	3	10.6	11.18	10.92	10.%	Morphine	3	0
Opium, gum	3	12.18	15.4	12.95	9.5%	Morphine	3	0
Stramonium leaves	2	0.185	0.33	0.257	0.25%	Alkaloids	1	1
Total	96						76	20

COMPARISON WITH REPORTS PREVIOUSLY SUBMITTED.

Year.	Total.	Above.	Below.	Percent above.
1909 Report	395	313	82	79.3
1910 Report	340	291	49	85.6
1911 Report	263	224	39	85.1
1912 Report	298	235	63	78.8
1913 Report	282	264	118	69.1
1914 Report	286	221	65	77.2
1915 Report	133	98	35	73.6
1916 Report	215	156	58	72.9
1917 Report	172	147	25	85.3
1918 Report	131	113	18	86.8
1919 Report	206	173	33	83.9
1920 Report	211	173	38	81.9
1921 Report	217	179	38	82.4
1922 Report	96	76	20	79.1

Last year aconite root, conium, lobelia and veratrum were the drugs one-half or more of which ran below standard. Nux vomica was given unfavorable rating. This year hyoscyamus is the only offender with stramonium on the margin.

(To be continued.)

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.

Committee on Publication: A. G. DUMEZ, *Chairman;* J. H. BEAL, IVOR GRIFFITH, R. A. LYMAN, H. B. MASON, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on the Progress of Pharmacy, *ex-officio.*

Collaborators: S. L. HILTON, President, A. Ph. A.; C. A. DYE, President, A. C. P. F.; L. L. WALTON, President, N. A. B. P.; E. FULLERTON COOK, Chairman, U. S. P. Revision Committee; CHARLES H. LAWALL, Chairman, Council A. Ph. A. The Chairmen of the Sections, A. Ph. A.: HEBER W. YOUNGKEN, IVOR GRIFFITH, W. H. ZIEGLER, C. W. HOLTON, CURT P. WIMMER; E. F. KELLY and JEANNOT HOSTMANN of the House of Delegates; A. G. DUMEZ, Secretary of the Council, WILLIAM B. DAY, General Secretary, and H. V. ARNY, Reporter on the Progress of Pharmacy.

VIEWPOINTS OF EDITORS OF DAILY PRESS.

"Analytical chemists are reaping a harvest from fees which they charge for analyzing liquor illicitly sold. Some of these chemists are broadcasting information, offering to test and determine the ingredients of any kind of booze."

"Narcotic drugs, as all physicians know, are too numerous already. The *chemists'* (italics ours—Ed.) expedition which has brought back to Philadelphia news of the discovery in South America of a drug which 'dispels fear' will not have justified the cost of its explorations unless it has other more useful finds to report.

"Drugs that 'dispel fear' are plentiful now. Criminal addicts can name several of them. Without them murders, burglaries and highway robberies would be fewer than they are.

"The police everywhere and the Federal authorities are too busy trying to check the sale of habit-forming drugs to feel any enthusiasm at the discovery of a new one."

Evidently, according to the preceding, which constituted the greater part of a brief editorial in one of the leading dailies, the expedition referred to is still a *chemists' expedition.* The editor commented only on effects that may bring about criminal use of the drug, not on possible contributory benefits; in his consideration of narcotics he has not thought of the relief given to suffering humanity, and that the fact of possible addiction to a narcotic has prompted research to find a drug of related action without habit-forming qualities. This has been successful to some extent and physicians, pharmacists and the AMERICAN PHARMACEUTICAL ASSOCIATION are entitled to a share of the credit.

THE WORD "SERVICE" OVERWORKED.

In response to an article in a recent issue of *Collier's* in which the statement was made that the word "Service" was being worked to death many replies were received most of them protesting. The following came from Pharmacist C. E. Pierce of Joliet, Montana:

"Thanks for your eleven-line obituary on the word *'service.'* I speak for a business that is often forced, because people will not judge values, to dispense more accommodation than drugs. We shall always do this; but we want the customer to know that most of us fulfil the trust he must repose in us when we compound his medicine.

"He may appreciate a smile when we sell him a stamp, at no profit to ourselves. But our real service is performed behind the scenes, when we throw a deteriorated preparation into the sink."

ENLIGHTENED SELF-INTEREST AND OBSERVATION.

Former Premier of France, Georges Clemenceau, addressed the students of the University of Nantes last May; of this institution he was a student before he attended Jefferson Medical College. In this address he commended an individualism of strong and high purpose, and contended that an enlightened self-interest directed on a high plane brought true happiness to the individual who served neighbors and fellow-citizens. The thought is applicable in organization membership—the individual who has the right self-interest serves his fellow-members and the association.

Professor Louis Agassiz, when asked what was the best thing he ever accomplished in his long career as a student of science, said: "I have taught four or five young men how to

observe." He probably had in mind teachers or scientists who had made a success and whom he had taught, but that is largely the value of teaching—to teach students how to think, and to observe.

ROCKEFELLER FOUNDATION GIFTS—WHY NOT PHARMACY?

A million dollars was granted for a combined medical school and hospital to be built by Columbia University and the Presbyterian Hospital, New York. The University of Brussels, Belgium, was given $3,500,000 for rebuilding the Hospital of St. Pierre and the Cavell-de Page memorial nurses' home. Apparatus and supplies given to five other hospitals in Central Europe cost $50,000.

In Canada, Dalhousie University was given $50,000; McGill University Medical School received $25,000, and the University of Alberta $25,000.

The money, including the funds supporting the 140 research students under the foundation all came from the $5,000,000 set aside in 1920 for such work.

PUBLICITY PROFESSOR AT HARVARD.

The Committee on Policy in Publicity, Harvard, after investigation of the publicity office and its work for the past three years since Frederick L. Allen assumed charge, "believes this function should be made a permanent one with an appropriation sufficient to offer a satisfactory academic career comparable to that of a full professor."

INFLUENCE OF COLLOIDS ON THE ACTION OF NON-COLLOIDAL DRUGS.

It has been shown that rabbit serum contains substances which have the property of inhibiting the action of atropine and pilocarpine, and it has been found that the fixing power of serum for pilocarpine can be inhibited by the action of chloroform, and more especially by ether. Other substances, such as peptone, have a similar effect. These observations, it is stated, fit in with the fact noted by Dale that histamine is ten times more poisonous for the cat when it is narcotized. This is regarded as an action of the narcotic in shifting the colloidal qualities of the serum in a direction in which the colloids have less capacity for fixing a poison. If this is so, a large field is opened up in the study of shock in the anesthetized subject.—W. S. van Leeuwen and A. von Szent-Györgyi (*Jour. Pharmacol. and Exper. Therap.*, 18, 271, 1921; through *Med. Sci. Abs. and Rev.*, April 1922, 73; through *Chemist & Druggist.*

A PHOTOGRAPH NO LONGER INVARIABLY TELLS THE TRUTH.

Vincent and Bernard Whitman recently gave a demonstration to a few friends in the Randall Morgan Laboratory (University of Pennsylvania) of a silhouetting photographic machine, the invention of Vincent Whitman.

With the aid of this machine figures can be placed in a picture that were not there originally, and the change cannot be detected by a powerful microscope.

One picture used in the experiment was a close-up of a man smoking a cigar. Standing erect on the cigar, was another man, knocking off the ashes with his foot. The additional characters in the pictures are not cut in as is the general method used by photographers in adding to a picture. The method used is by means of silhouette, leaving space in the picture for the character.

Seemingly this invention lessens the value of photographs as court evidence.

AN A. R. A. DRUG STORE IN MOSCOW.

A free drug distributing house has been opened by the Medical Division of the American Relief Administration. Caroline Klein Robbins, a graduate of the Brooklyn College of Pharmacy, Class of 1916, is the pharmacist in charge, in the employ of the A. R. A. Mrs. Robbins is a registered pharmacist in the states of Illinois and New York and has been employed in the Washington Park Hospital, Chicago, and the Lebanon Hospital, Bronx, New York, and the Women's and Children's Hospital at East Fifteenth Street, near Stuyvesant Square, New York. She has been in Europe for nearly a year, visiting Italy and Austria, and for the last few months in Russia.

The American Relief Administration medical program for the Russian Unit is no doubt the largest medical relief enterprise ever undertaken in the world. Approximately $8,000,000 worth of supplies have been contributed by the American Red Cross and the United States Government, from surplus Army supplies, and these are now being distributed by the A. R. A. to the destitute institutions of Russia.

REVISION OF THE BRITISH PHARMACEUTICAL CODEX.

Pharmacists will be glad to learn that revision of the British Pharmaceutical Codex is under way. The *Pharmaceutical Journal and Pharmacist* of June 17 comments editorially on the work in progress, and asks for the coöperation of pharmacists in the revision of this useful compendium. The "Codex" is found

in many pharmacies of this country, and the revised edition will find a corresponding welcome.

VITAMIN D.

An experimental demonstration of the existence of a vitamin which promotes calcium deposition is printed in the June *Bulletin*, Johns Hopkins Hospital. Research studies extending over a period of three years are reported by E. V. McCollum, Nina Simmonds and J. Ernestine Becker.

E. V. McCullum and Nina Simmonds contributed a comprehensive article to the June 24 number of *Jour. A. M. A.* on "The Potency of Commercial Vitamin Preparations." Charts accompany the article; some of these tests indicate that exploiters in the medicine field are quick to note the impressions made on the public by new medical discoveries.

PERSONAL AND NEWS ITEMS.

John W. Ballard, joined the American Pharmaceutical Association in 1871. His name was overlooked in giving a list of those who joined the Association fifty or more years ago, in the May issue. A sketch of Mr. Ballard appeared in the April JOURNAL of 1921.

Wilhelm Bodemann has called our attention to the fact that Dr. Enno Sander was a member of the C. V. D. A. Knowing Dr. Sander's attachment for the latter organization, we are making this record.

Edward Vernon Kyser, chief chemist for the Cincinnati Soap Co., has resigned and accepted appointment as professor of manufacturing pharmacy at the University of North Carolina, Chapel Hill. Mr. Kyser has just retired as president of the Cincinnati branch of the American Pharmaceutical Association.

E. H. Walsdorf, member of Louisiana Board of Pharmacy under four Governors, was honored by one of the New Orleans' papers; the publication spoke of him as "a man of many enterprises and a successful and worthy citizen." Several columns of the issue were required for a summary of his activities and a half-tone of our fellow-member accompanied the sketch.

E. H. Thiesing, in the drug business in Cincinnati for the past twenty-eight years at Lincoln and Gilbert Avenues, Walnut Hills, has sold his store to Marsh and Banks. Mr. Marsh clerked for Mr. Thiesing for a number of years. Mr. Thiesing has gone to California for an extended vacation.

Chas. G. Merrell, of Cincinnati, accompanied by Mrs. Merrell and their daughter, Miss Cora, are visiting Muskoka Lakes in Canada.

Theodore Weicker is in Europe. While to some extent this is a pleasure trip, Mr. Weicker is studying medicinal products of Europe, and the laboratories engaged in research. Mr. Weicker was one of the first contributors to the Headquarters fund of the A. Ph. A.

H. S. Noel, a past chairman of the Section on Commercial Interests, was one of the speakers at the North Carolina Pharmaceutical Association Meeting.

Prof. Otto Raubenheimer spent a month's vacation at Lake Queechy, New York.

Roland E. Kremers, for some time of the faculty of Vanderbilt University, will be at the University of Wisconsin for a year or more, as a Fellow of the National Research Council. His work will be a continuation of the research on the biogenesis of oil of peppermint, and other related subjects.

Chairman Heber W. Youngken, of the Scientific Section, A. Ph. A., has been re-elected editor of the Section of Pharmaceutical Botany and Pharmacognosy by the Board of Control of *Botanical Abstracts*.

Dean E. V. Howell, was presented with a watch by members of the University of North Carolina Pharmacy classes. The presentation was made by Prof. J. G. Beard, and the occasion was the Dean's 25th anniversary.

E. V. Zoeller, for many years a member of the North Carolina Board of Pharmacy, was honored with the degree of Doctor of Pharmacy by the University of North Carolina.

H. G. Ruenzel, in an address on plant growing before Wisconsin Pharmaceutical Association stated that by careful propagating the potent strength of Digitalis had been raised to double the U. S. P. standard.

Dr. Edward Kremers addressed the association on the results of the work of the Wisconsin Experiment Station and research laboratory.

Samuel T. Hensel, in *Trail and Timberline*, describes Loch Vale. The Colorado Mountain Club made a trip during July, into the country described by Mr. Hensel.

Dr. H. M. Seem is spending his vacation at Cape Elizabeth, Maine.

J. A. Legendre, who aided largely in the entertainments provided at New Orleans A. Ph. A. meeting, and who with his son conducts the Medical Building Pharmacy, has closed a 20-year lease on the entire building for a sum which is stated to approximate $300,000.

Pike's Peak Pilot is the name of the N. W. D. A. publicity medium for this year. These

official organs are published prior to the annual convention at or near the N. W. D. A. Convention City. Colorado Springs will entertain the wholesalers this year. A view of the headquarters hotel, *The Broadmoor*, is shown. It is located at the foot of Cheyenne Mountain, one of the most beautiful spots in the vicinity of Colorado Springs.

Ed. Wynn, the star in "A Perfect Fool" and born Izzie Leopold, was once a drug store clerk. He used to clown even while at work in the store. Let a customer show signs of being a crank and Ed. would soon have him laughing. One day a theatrical manager came under Ed.'s spell and the result was the drug clerk went on the stage.

OBITUARY.

FREDERIC PERCIVAL TUTHILL.

Prof. Frederic P. Tuthill, chemist, connected with Brooklyn College of Pharmacy for twenty years, died July 2, aged 55 years. Professor Tuthill had been sick for several months prior to his death at his summer home, Governors Island, Stony Creek, Conn. He was born at Ilion, N. Y., where he received his earlier education and, later, graduated from New York College of Pharmacy in the class of 1867. For many years he was connected with Parke, Davis & Co. He held membership in various pharmaceutical organizations, and joined the American Pharmaceutical Association in 1899. He was a member of the Masonic bodies, and the Society of the Sons of the American Revolution.

The funeral service was held at St. Bartholomew P. E. Church in Brooklyn and was attended by a large gathering of his friends and associates. The faculty and trustees of the Brooklyn College of Pharmacy were present in a body. Among others in attendance were: George R. Tompkins, manager of the New York offices of Parke, Davis & Co.; Dr. Jacob Diner, president of the New York State Pharmaceutical Association; Charles F. Fischer, for the N. Y. State Travelers' Auxiliary; Dr. George C. Diekman, for the New York College of Pharmacy, and Robert S. Lehman, representing the 1867 Club, of which Professor Tuthill was a member.

JOKICHI TAKAMINE.

Dr. Jokichi Takamine, Japanese Chemist, member of the American Pharmaceutical Association since 1898, died July 22, of nephritis, aged 68 years. He graduated in chemical engineering from the University of Tokyo in 1879; thereafter the Japanese Government sent him to the University of Glasgow and Andersonian University. Returning from Great Britain in 1882, he was appointed head chemist of the (Japanese) Imperial Department of Agriculture and Commerce, serving until 1884, when he was sent to New Orleans as Japanese Commissioner to the Cotton Centennial Exposition. Here, in 1885, he married Miss Caroline Hitch, of New Orleans.

Returning to Japan he organized and erected the first super-phosphate works at Tokyo. In 1890 he returned to the United States, and applied his new process of conversion and fermentation to practical purposes, resulting in the production of the diastatic enzyme, which he named Taka-diastase. Later he established a research laboratory in New York, and isolated the active principle of the adrenal glands, adrenalin.

In 1915 he was decorated by the Emperor of Japan with the Fourth Order of the Rising Sun. The Emperor had previously made him a member of the Royal Academy of Science. In New York he was president of the Nippon Club and a member of others, including Lotos, Chemists, Drug and Chemical and New York Athletic.

Dr. Takamine was a consulting chemist for Parke, Davis & Co., Detroit, and president of the Takamine Ferment Company, of Chicago, the International Takamine Ferment Company, Takamine Commercial Corporation, with offices in New York City, and other organizations. He is survived by his widow and two sons, Jokichi, Jr., and Eben.

The deceased had a beautiful country home at Merriewold, N. Y., known for its extensive Japanese gardens.

ANTON FREERICKS.

Anton Freericks, brother of our fellow-member Frank H. Freericks, secretary and general counsel for the American Druggists' Fire Insurance Company, died at his home, in Cincinnati, Ohio, June 30. Sympathy is extended on behalf of the American Pharmaceutical Association to the brother.

PROF. EDMUND WEIL.

Prof. Edmund Weil of the medical faculty in Prague—known through his researches on

the rôle of white blood cells in the mechanism of immunity and as one of the discoverers of the Weil-Felix reaction—died June 15, of typhus fever. The infection was the result of an accident. He left his life's work unfinished at the stage when there was promise of achieving the final aim in the immunization of man against typhus fever.

SOCIETIES AND COLLEGES.

SUBSCRIPTIONS TO AMERICAN PHARMACEUTICAL ASSOCIATION HEADQUARTERS BUILDING FUND.

Previously reported	$1,650.50
No.	
45. Theodore J. Bradley, Boston, Mass., (Paid)	25.00
46. William B. Day, Chicago, Ill.	100.00
47. F. C. Pauley, St. Louis, Mo.	25.00
48. William Beukma, Denver, Colo.	5.00
49. E. F. Kelly, Baltimore, Md.	100.00
50. Byron Armstrong, Jacksonville, Ill.	25.00
51. Sewell Thornhill, Sayville, N. Y., (Paid)	5.00
52. Carl Weeks, Des Moines, Ia., (Paid)	5.00
53. Dr. Charles T. Root, Detroit, Mich., (Paid)	2.00
54. S. A. Eckstein, Milwaukee, Wis.	10.00
55. H. A. B. Dunning, Baltimore, Md.	100.00
56. P. J. Ackerman, Columbus, Ohio	5.00
57. A. G. DuMez, Washington, D. C.	100.00
58. J. H. Sencindiver, New York, N. Y.	10.00
59. C. H. Packard, East Boston, Mass.	100.00
60. G. A. Pfeiffer, New York, N. Y.	100.00
61. H. V. Arny, New York, N. Y., (Paid)	50.00
62. E. G. Eberle, Philadelphia, Pa., (Paid $50)	100.00
63. Uriel Russin, Ph. G., New York, N. Y.	5.00
64. Josie Wanous Stuart, Minneapolis, Minn.	25.00
65. Luis Mulet, Mayaguez, Porto Rico	2.00
66. E. H. Gane, New York, N. Y.	25.00
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80. L. G. Heinritz, Holyoke, Mass.	25.00
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82. Hugo Kantrowitz, New York, N. Y., (Paid)	10.00
83. B. L. Murray, Rahway, N. J.	5.00
84. Otto Raubenheimer, Brooklyn, N. Y.	25.00
85. Edgar L. Patch, Stoneham, Mass.	100.00
86. H. M. Whelpley, St. Louis, Mo., (Paid)	100.00
87. L. E. Sayre, Lawrence, Kan.	25.00
88. Julius Greyer, Cincinnati, O.	25.00
89. Kappa Psi Fraternity, Massachusetts College of Pharmacy.	64.40
Total	$3,528.90

The Kappa Psi Fraternity Donation was contributed by the following:

Name	Address
C. Herbert Packard,	East Boston, Mass.
Carson M. DeLon,	Kokomo, Ind.
A. E. Richardson,	Medford, Mass.
Vincent James,	Jamaica Plain, Mass.
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Robert A. Goodless, Springfield, Mass.
Michael Gannino, Lynn, Mass.

Subscription No. 15, reported in May issue, p. 392, of $100, was made by Herman Ludwig Emmerich, 834 Downer Ave., Milwaukee, Wis.

The total subscriptions reported in the foregoing list amount to $3,528.90. It is hoped every member of the Association will avail himself of this opportunity; what amount he will give is a matter for individual decision. The Committee has the assurance of substantial aid from outside sources, provided the members of the Association subscribe with sufficient liberality.

CLEVELAND MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

While it is hardly likely that the August issue of the Journal will reach the members prior to the Convention, the following additions to the program, July issue pp. 577 and 553 are contemplated.

The Scientific Section hopes to have a "Special session" Thursday, August 17, at 1.30 P.M. Additional entertainments have been provided for as follows: Monday, 6 P.M. Special Dinner of Conference of Pharmaceutical Faculties; 9 P.M., Entertainment, Ball Room Hotel Statler.

Thursday, 12.00 M., Luncheon for the Ladies, under the auspices of the Women's Organization, N. A. R. D., Cleveland Chapter, at Hollenden Hotel; 2.00 P.M., Ladies' visit to the Cleveland Museum of Art. Wednesday, 12.00 M., Luncheon at Hotel Statler; 8.00 P.M., Ladies Theatre Party.

NOTICE.

When you buy your railroad ticket to Cleveland for the American Pharmaceutical Association meeting, August 14–19, be sure and ask your ticket agent for a certificate. Do this whether you plan to return by the same route or not. Do not get a receipt, but ask for a Certificate.

For those who come by the way of automobile, garage service can be obtained just one short block from the headquarters hotel. The Euclid Square Garage Company, Thirteenth Street just north of Euclid, has made the special Convention rate of $5.00 per week, come and go as you please. Its telephone number is Prospect 98.

THE SECTIONS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

SCIENTIFIC SECTION.

Refer to program on page 581, July issue. The following are titles of *additional* papers they are not arranged according to program.

"Relation between Chemical Structure and Pharmacological Action of Atropine and Homatropine." David I. Macht.

"Pharmacology of Benzaldehyde, Mandelic Acid and Some Benzyl Compounds Occurring in Nature." David I. Macht.

"The Effect of Large Doses of Cannabis Indica (Subjective Experiment)." Albert Schneider.

"Cocaine and Procaine." Paul S. Pittenger.

"Proposed Pharmaco-Therapeutic Institutions and Obstacles." F. E. Stewart.

"The Pharmacology of Pyrethri Flores." W. H. Ziegler.

"The Drug Garden.—Its Relation to the School of Pharmacy, State College and to Community." Anton Hogstad, Jr.

"A Back-Yard Pharmaceutical Garden." E. E. Stanford.

"Inorganic Constituents of Vegetable Drugs." E. L. Newcomb.

"Aloin." H. Engelhardt and H. H. Crosbie.

"Studies of the Bark of *Myrica Cerifera*, Linne." Herber W. Youngken.

"Nicandra Physalodes (L.) Pers." Anton Hogstad, Jr.

"Histology of Cocillana and Substitute Barks." E. E. Stanford.

"Chemistry of Cocillana and Substitute Barks." Harvey A. Seil.

"American Male Fern, *Dryopteris Marginale*." E. E. Stanford.

"Botanical Drug Resources of New England." E. E. Stanford.

"A Review of Contributions to the Literature of Pharmaceutical Botany and Pharmacognosy during 1921–1922." Heber W. Youngken.

SECTION ON PLANT CHEMISTRY.

"On the Chemistry of the Seeds of *Datura stramonium*." Isaac Nishimura and Edward Kremers.

"Balsam of White Fir." S. S. Aiyar and Edward Kremers.

"Constants of Cassia Leaf and Twig Oils." I. Nishimura and Edward Kremers.

"Phytochemical Notes." (Tentative title) C. L. Alsberg.

"The Resorcin Test for Methyl Alcohol." A. B. Lyons.

Discussion and Review of Work Relating to Pharmacy: e. g., Bacteriology. Biological Assay, and especially The Mulford Biological Exploration.

"Some Interesting Medicinal Plants of Bolivia, (Illustrated with specimens)." H. H. Rusby.

"A Bio-assay Method for Standardizing the Powdered Pyrethri Flores." W. H. Ziegler. Demonstration of new apparatus and exhibits.

"The Use of Precipitated Copper for Sterilizing Purposes." Gretchen Sprecher.

"Absorption of Gases by Pinene." W. F. Sudro and Edward Kremers.

"Fractionation of Turpentine Oil." W. F. Sudro and Edward Kremers.

"Hydroxylamine from Nitrosopinene." J. A. Hall and Edward Kremers.

"New Guaiacol Derivatives." Lina Winkelblech and R. E. Kremers.

"The Chemistry of Heptane and its Solutions." Edward Kremers.

"Diethylphthalate." J. A. Handy and L. F. Hoyt.

"Fluid Extract of Ergot." J. P. Snyder.

"Influence of Hydrochloric Acid in Cinchona Preparations." Wilbur Scoville.

"Hot Extraction." Wilbur Scoville.

"Production of Thymoquinone on a Semi-commercial Scale." Ralph M. Hixon and Edward Kremers.

"Sodium Chloride." H. L. Harris.

"The Identification of Some Local Anesthetics." L. E. Warren.

"The Action of Light on Soluble Ferric Phosphate." N. R. Mueller and Edward Kremers.

"Preliminary Note on Catnep Lactone." O. A. Beath and Edward Kremers.

"Estimation of Nitroglycerin." H. Engelhardt.

SECTION ON PRACTICAL PHARMACY AND DISPENSING.

The following are titles of papers so far submitted; they bave not been arranged according to program. The second session will be given over to Hospital Pharmacy and for the reading and discussion of papers by hospital pharmacists.

"The Use of an Indicator in the Compounding of a Powder Prescription." Charles A. Greenstone.

"Variance in Powdered Extracts." Elmer H. Hessler.

"Infusion of Digitalis." Caswell A. Mayo.

"Physics in Pharmacy." (Second Paper.) J. U. Lloyd.

"Silica Gel as a Filtering Agent in Pharmacy." John C. Krantz, Jr.

"Experiments on a Permanent Chalk Mixture." Bernard Fantus, M.D., and Clyde M. Snow.

"Aqueous Elixir and Alcoholic Elixir versus Aromatic Elixir." Bernard Fantus, M.D., and Clyde M. Snow.

"Leeches—How to Dispense Them." Otto Raubenheimer.

"The Permanency of Some Dyes." E. A. Ruddiman and R. H. Clark.

"Some Incompatibilities of Aspirin." E. A. Ruddiman.

"The Volatility of Chloroform from Chloroform Liniment." J. W. E. Harrisson.

"A Few Rare Incompatibilities." Ralph Calvert.

"Pharmacists for Small Hospitals." Mabel Starr.

"Duret's Solution in Hospital Practice." Carl F. Dyna.

"Weight per Volume Solution of Potassium Iodide (with demonstration)." J. A. Becker.

"Hospital Pharmacy." W. H. Ford.

"The Status of the Hospital Pharmacist." Ivor Griffith.

"Testing Ink for Sterilizers and Autoclaves." Ivor Griffith and Morris Griffith.

SECTION ON HISTORICAL PHARMACY.

The titles of papers are given but not in the order of the program of the Section on Historical Pharmacy.

"Biographical Sketch of Emile Bourquelot." Wm. H. Gano.

"Lycion or Lyceum of the Ancients." Wm. H. Gano.
"Contemporary History, 1921." Clyde L. Eddy.
"Medicinal Folk Lore, Etc." E. V. Howell.
"One Hundred Centuries of Man's Activities." (Illustrated.) C. T. P. Fennel.
"Illustrated Lecture." H. M. Whelpley.
"Pharmacy and the Postage Stamp." (Illustrated.) R. H. Lehman.
"The Backgrounds, Foundations and Founders of the American Materia Medica." (Illustrated.) H. W. Felter.
"Memories of Seventy-Two." Thos. D. McElhenie.
"Jobbers I have Traded With." Thos. D. McElhenie.
"The Oldest Pharmaceutical Organization in America." Hugo Kantrowitz.
"The First Pharmacopoeia Published in the United States." Joseph W. England.
"Bezoar." William Kirkby, M.Sc., F.C.S.
"Historical Fragment. Col. May's Journey to the Ohio Country, 1788–1789." Edward Kremers.
"A Swedish Drug Store of the 18th Century." B. E. Höckert.
"Historical Sketch of the College of Pharmacy of the University of Illinois." Wm. B. Day.
"A Contribution." Adelaide Rudolph.

SECTION ON EDUCATION AND LEGISLATION.

"The Virginia Experiment." W. F. Rudd.
"Colloidal Chemistry and Its Application to Pharmacy. C. B. Jordan.
"The Relation of Education to Legislation." L. E. Sayre.
"Progress in Pharmaceutical Education and Standards in the United States." H. C. Washburn.
"The Teaching of Qualitative Analysis in Colleges of Pharamcy." C. B. Jordan.
"Standards of Articles Deleted from the U. S. P. and N. F. Otto Raubenheimer.

HOUSE OF DELEGATES.

Officers: Chairman E. F. Kelly; First Vice Chairman, W. B. Philip; Second Vice Chairman, E. L. Newcomb; Recording Secretary, Jeannot Hostmann.

Sessions: Tuesday, August 15, 10.30 A.M., jointly with the first General Session; Tuesday, August 15, 3.30 P.M., Friday, August 18, 10.30 A.M.

PROGRAM.

First Session: Tuesday, August 15, 10.30 A.M.

1. Chairman's Address.

Second Session: Tuesday, August 15, 3.30 P.M.

1. Roll Call of Delegates.
2. Reception of Delegates from Departments of U. S. Government.
3. Appointment of Committees on Resolutions and Nominations.
4. Report of the Recording Secretary.
5. Reading of Communications.
6. Calling of Roll of Delegates for Reports or Resolutions.

Third Session: Friday, August 18, 10.30 A.M.

1. Reading of Minutes of Second Session.
2. Report of the Committee on Resolutions.
3. Miscellaneous Business.
4. Unfinished Business.
5. Report of the Committee on Nominations.
6. Election and Installation of Officers.
7. Adjournment.

THE NATIONAL ASSOCIATION OF BOARDS OF PHARMACY IN CLEVELAND.

Secretary H. C. Christensen has sent out a call to all boards of pharmacy to send delegates to the Cleveland Meeting. The portion of his letter which directs attention to some of the important matters to come up at the annual meeting follows:

(1) This is "prerequisite year." Some forty or more States Legislatures will be in session during the coming winter. Twenty-one states have enacted prerequisite legislation. In all of the remaining states and the District of Columbia the question of prerequisite legislation will—or should—come up. Your Committee, in accordance with request of the Executive Committee, has drafted a "model" prerequisite clause which should be discussed and amended, if thought best, and then recommended for the guidance of the various states, in order to insure the uniformity so essential to the proper carrying-out of the principles of reciprocity.

(2) So many prerequisite laws are now in force, and others to become effective soon, it seems the time has arrived for our Association to establish at least uniform minimum standards for the recognition of pharmacy schools whose diplomas may be recognized by States demanding graduation as a qualification for admission to examination for Pharmacist. It is understood, of course, that the recognition of any school is a matter for action by the Board of each individual State, but I am sure

that Boards generally would welcome some carefully thought out standard which might be adopted as their own, for use in determining whether they should recognize a given school or not. By genuine coöperation, I am sure the N. A. B. P. can work out a standard which will be acceptable and helpful to the individual Boards, making for uniformity instead of the lack of it, as is now the case. For this reason, it is of vital importance that every Board should be represented at the meeting and participate in the discussion.

(3) As part of number 2, perhaps, or as a separate matter, the question of preliminary educational standards for admission to recognized schools of pharmacy and for entrance to Board examinations, should be considered. Especially, relative to the "equivalent" for high school units, permitted under the laws or by ruling of the Boards, in various states. This is of the utmost importance in order to prevent serious inconvenience to applicants for reciprocity in future.

(4) Probably no question will demand more attention than that of consolidation of Boards under one head—such as is now in force in Illinois, Idaho, Nebraska, Utah and Washington, and threatening in many other states. This plan has been in force in Illinois for five years. The N. A. B. P. has neither opposed nor supported the proposition actively. We have felt that it was only fair to give the plan a "try-out." After five years of experiment with this type of law, I think we have reached the point where we can justifiably express an opinion and I believe it must be one of entire condemnation. The removal of pharmaceutical matters from the hands of Boards of Pharmacy and pharmacists—which is in effect what such a law does—destroys, to a great extent, the interest of pharmacists in their profession, and furthermore, makes possible scandals, illegal trafficking in licenses, etc., as recent exposures in Illinois have proven. Inasmuch as many states contemplate adopting similar laws, I believe the N. A. B. P. should go on record as opposing consolidation laws—for pharmacy—of every type and variety.

RESOLUTIONS OF MEDICAL ADMINISTRATIVE OFFICERS OF THE MEDICAL DEPARTMENT RESERVE CORPS, U. S. ARMY OF THE FOURTH CORPS AREA.

During a recent encampment of the Medical, Dental, Veterinary, Medical Administrative Officers of the Medical Department Reserve Corps, U. S. Army of the Fourth Corps Area, Camp McClellan, Alabama, July 12 to 26, 1922, Temporary Organization Medical Section, Organized Reserves for this area was effected with Lieutenant Colonel Hardie R. Hays, Jackson, Miss., as Acting President, Major L. H. Webb, M. O. R. C. New Orleans, La., as Acting Secretary.

It is hoped to organize during the National Convention of the American Legion in New Orleans, La., October 1922, a National Reserve Officers Association with the Medical Section to function in this organization.

The following resolutions were passed:

We, the Medical, Dental, Veterinary, Medical Administrative Officers of the Medical Department Reserve Corps, U. S. Army of the Fourth Corps Area on active duty at Camp McClellan, Alabama, July 12 to 26, 1922, for the purpose of Field Training, being in meeting assembled and desiring to express our appreciation for the training and courtesy shown be it resolved:

1st—That we tender to Surgeon General and subordinates, to the Commandant Organized Reserve Corps Camp McClellan and subordinates, particularly Camp Surgeon and his staff of trained instructors our sincere appreciation and thanks for the competent manner in which the technical instruction was given and courtesies shown.

2nd—That we go on record as endorsing this plan of training for Medical Officers and hope that steps will be taken to procure the necessary funds to extend training in the future to a larger number.

3rd—That we are unanimously opposed to the initial appointment of Officers in the Medical Reserve Corps above the grade of First Lieutenant, who were not on active duty during the World War.

4th—That we further oppose any policy that places restrictions such as age, etc., or attendance at Camp and any other restrictions of Medical Officers promotions which are not placed on promotions of Reserve Officers in the line. Attention is respectfully invited to the fact that Medical Officers are in civilian life practicing every day their branches, and those Officers of the non-technical branches are not practicing the form of duty upon which they will be called to function in time of war.

5th—That copy of these resolutions be submitted to the Surgeon General (through Camp Surgeon) and Camp Commandant, Camp McClellan, Alabama, also that copy

be furnished the *Journal of The American Medical Association, Southern Medical Journal, Journal American Military Surgeons, American Hospital Journal,* JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, *National Dental Journal, Military Dental Journal* and *American Veterinary Journal.*

L. H. WEBB, MAJOR, M. O. R. C.
Secretary.
New Orleans, Louisiana.
F. M. HARBIN, MAJOR, M. O. R. C.
Columbia, South Carolina.

(Signed)

F. M. BOYETTE, CAPTAIN, M. O. R. C.
Owelda, Tennessee.
L. H. BREVARD, 1ST LT., M. O. R. C.
Hernando, Mississippi.

AMERICAN PHARMACEUTICAL MANUFACTURERS' ASSOCIATION.

The convention of the American Pharmaceutical Manufacturers' Association was held from June 12 to 17 at Bedford Springs, Pa.

Among the resolutions which were adopted was one against the enactment of federal and state laws outlawing heroine entirely. Another recommended the restriction of the sale of cannabis indica on the grounds that it is a dangerous narcotic drug, and to insure its legitimate use. The association also recommended the use of the triplicate order form in place of the present duplicate form for the sale of narcotics. The organization petitioned the American Medical Association to investigate whether codeine is a dangerous drug because of its use by drug addicts.

Another resolution indorsed a recommendation that the government and the medical and pharmaceutical professions join in setting apart one week in each year to be known as "Public Health Week" to be devoted to spreading a propaganda of health among the people.

George C. Pratt of Philadelphia, was elected President; the other officers are: Vice-Presidents, G. A. Kinsell, Saratoga, N. Y., and Geo. Flint, Decatur, Ill.; Secretary-Treasurer, Ralph R. Patch, Boston.

RECOMMENDATIONS OF THE COMMITTEE ON LEGISLATION OF AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

1. That the bill already drawn to amend the Harrison act be introduced in Congress at the earliest possible date.

2. That the president of the association be authorized to secure the personal presence of a representative of the association before any committee of any state legislature upon any measure pending which may, in his judgment, seriously menace the interests of the association or any of its sections.

3. That the Executive Committee be authorized to provide suitable prizes for the best, the second best and the third best paper written by any person connected in any capacity with any member of the association, setting forth the general nature of the manufacturing pharmaceutical industry, and distinguishing products intended for the medical profession, as well as ordinary "household" or "domestic" remedies from patent or proprietary medicines.

In submitting this recommendation we wish to point out that it is not the intent of the committee to reflect upon those who prefer to offer their products direct to the public for self-medication; but it must be recognized that laws which may not seriously affect the proprietor of one, or at most six products, may destroy the business of a manufacturer whose function is to supply, in their various forms, the many hundred medicinal agents used and prescribed by the physician in the treatment of disease. Our problems are peculiar and we have the right to seek their solution without dictation from the proprietary interests.

4. We renew our recommendation of a year ago respecting the simplification of the Volstead act, and such modifications of the rules and regulations as will make it possible and practical for manufacturing pharmacists to supply dealers and physicians, for medicinal purposes only, with recognized medicinal preparations which may be classed as intoxicating liquors, respect being had to customary packages and quantities.

5. We recommend active opposition to any stamp or sales tax on medicinal agents not held out to the public for self-medication.

6. We recommend the adoption of the following resolution:

"*Resolved,* That it is the sense of the American Drug Manufacturers' Association that the Eighteenth Amendment should be vigorously enforced; but we protest that such amendment in no way prohibits or restricts the bona fide use of intoxicating liquors in the practice of medicine and the manufacture and sale of medical agents; and we further protest that any law, rule or regulation treating members of the medical profession and the drug trade as potential violators of the Eighteenth Amendment is not in harmony with American ideas

of government, nor compatible with the highest interests of the public health which interests it is the peculiar function of medicine to serve; and we protest that such laws, rules and regulations inspire a contempt for the Eighteenth Amendment and thus prejudice its proper and effective enforcement."

7. Finally, we repeat our recommendation of a year ago, that as soon as the condition of its treasury will permit, the association father a comparative study of the drug laws of the various states with the idea of furnishing a compact, concise and accurate work, reference to which will enable one to tell what the law of a particular state is by referring to a statement of the law as compared with the national act; or, where no national act exists, then with the law of some one of the leading states whose law will be given in full.

PITTSBURGH MEETING OF AMERICAN CHEMICAL SOCIETY.

The fall meeting of the American Chemical Society will be held with the Pittsburgh Section, Monday, September 4, to Saturday, September 9, inclusive. All Divisions and five Sections are planning an extensive meeting. The Pittsburgh local committees have already nearly completed their arrangements and an interesting program, together with instructive excursions, is assured. They hope to have two thousand members present.

The National Exposition of Chemical Industries meets in New York, September 11 to 16, and members can readily go from Pittsburgh to New York for this meeting.

NATIONAL ASSOCIATION OF RETAIL DRUGGISTS WILL MEET IN DETROIT.

The annual meeting of the National Association of Retail Druggists will be held September 25–29. The Statler Hotel has been selected as Headquarters for the meeting. N. H. Jones is chairman of the Hotel Committee, at the Convention Headquarters; he will be glad to assist members in making reservation at headquarters or other hotels. Some of the more important Detroit hotels are the Statler, Tuller, Wolverine, Fort Shelby, Cadillac, Charlevoix, Addison and Norton.

OFFICERS OF STATE PHARMACEUTICAL ASSOCIATIONS 1922–1923.

(Continued from p. xvi, July 1922)

(Secretaries of associations are asked to make corrections and send in list of officers, and names of next convention city.)

COLORADO.

President, Julius F. Earnest, Denver.
First Vice-President, Hal S. Coulson, Boulder.
Second Vice-President, Ernest J. Howard, Glenwood Springs.
Secretary, Chas. J. Clayton, Denver.
Treasurer, C. D. Smith, Grand Junction.
The place of meeting for 1923—Glenwood Springs.

CONNECTICUT.

President, Ernest L. Gyde, Waterbury.
First Vive-President, S. H. Williams, New Haven.
Second Vice-President, H. F. Ruby, New Haven.
Secretary-Treasurer, P. J. Garvin, Middletown.

DELAWARE.

President, N. B. Danforth, Wilmington.
Vice-Presidents, New Castle County, Walter L. Morgan; Kent County, Edgar H. Bratten; Sussex County, A. H. Morris.
Secretary, Robert H. Newsom, Wilmington.
Treasurer, B. T. Bienkowski.

GEORGIA.

President, Henry C. Shuptrine, Savannah.
First Vice-President, T. H. Brannon, Atlanta.
Second Vice-President, J. L. Brooks, Tifton.
Secretary, T. A. Cheatham, Atlanta.
Treasurer, Thomas C. Marshall, Atlanta.

ILLINOIS.

President, S. L. Antonow, Chicago.
First Vice-President, F. L. Pfaff, Centralia.
Second Vice-President, W. V. Duffner, Peoria.
Third Vice-President, Lee M. Pedigo, Chicago.
Secretary, W. B. Day, Chicago.
Treasurer, G. M. Bennett, Urbana.

KANSAS.

President, F. W. Ekstrand, Salina.
First Vice-President, Roy R. Shoaf, Topeka.
Second Vice-President, Cecil Stewart, Pretty Prairie.
Secretary-Manager, J. Will Kelley, Topeka.
Treasurer, John Schmitter, Gypsum.
The place of meeting for 1923—Wichita.

LOUISIANA.

President, John W. Collins, Monroe.
First Vice-President, Joseph H. Berner, New Orleans.
Second Vice-President, Warren E. Scott, Oakdale.
Secretary, Geo. W. McDuff, New Orleans.
Treasurer, Adam Wirth, New Orleans.
The place of meeting for 1923—New Orleans.

MARYLAND.

President, A. L. Lyons, Havre de Grace.

First Vice-President, Charles L. Meyer, Baltimore.

Second Vice-President, Webster K. Edwards. Cumberland.

Third Vice-President, H. A. B. Dunning, Baltimore.

Secretary, E. F. Kelly, Baltimore.

Treasurer, Samuel Y. Harris, Baltimore.

MICHIGAN.

President, George H. Grommet.

First Vice-President, Milo Bolander.

Second Vice-President, E. J. Torbeson.

Secretary, Louis V. Middleton.

Treasurer, Ellis E. Faulkner.

MISSISSIPPI.

President, Joe A. Moss, Biloxi.

First Vice-President, W. H. Rayner, Vicksburg.

Second Vice-President, T. E. Goodman, New Albany.

Secretary-Treasurer, A. S. Coody, Jackson.

The place of meeting for 1923—Meridian, June 12.

MISSOURI.

President, M. J. Ulber, Kansas City.

First Vice-President, Arthur C. Schulte, St. Louis.

Second Vice-President, Robert Lisch, Springfield.

Third Vice-President, Dan Leyerle, Joplin.

Secretary, D. V. Whitney, Kansas City.

Treasurer, William Mittelbach, Boonville.

NEBRASKA.

President, David S. Simms, Hastings.

First Vice-President, A. E. Carlson, Danneborg.

Second Vice-President, W. W. Mahannah, Butte.

Third Vice-President, J. C. Munt, Omaha.

Secretary, J. G. McBride, University Place.

Treasurer, D. D. Adams, Nehawka.

The place of meeting for 1923—Hastings.

NEW HAMPSHIRE.

President, John R. Kelly, Newport.

First Vice-President, Arthur O'Borque.

Second Vice-President, Waldo Babson.

Secretary-Treasurer, Earl Marshall, Manchester.

NEW JERSEY.

President, William H. McNeill, Patterson.

First Vice-President, Frank H. Eckert, West Hoboken.

Second Vice-President, Thomas K. Edwards, Dover.

Secretary, Jeannot Hostmann, Hoboken.

Treasurer, Edgar R. Sparks, Burlington.

The place of meeting for 1923—Hotel Essex and Sussex, Spring Lake.

NEW YORK.

President, Jacob Diner, New York.

First Vice-President, Emory H. Brecton, Buffalo.

Second Vice-Presdient, George R. Christ, Brooklyn.

Third Vice-President, M. Shepherd, Oyster Bay.

Secretary, E. S. Dawson, Syracuse.

Treasurer, Frank Richardson, Cambridge.

NORTH CAROLINA.

President, J. A. Goode, Asheville.

First Vice-President, P. A. Lee, Dunn.

Second Vice-President, James P. Stowe, Charlotte.

Third Vice-President, A. A. James, Winston-Salem.

Secretary-Treasurer, J. G. Beard, Chapel Hill.

The place of meeting for 1923—With South Carolina Association at Greenville, S. C.

OKLAHOMA.

President, Tom L. Frame, Ardmore.

First Vice-Preaident, J. W. Montfort, Alva.

Second Vice-President, Clarence Anderson, Hugo.

Secretary-Treasurer, H. S. Shackelford, Wynnewood.

The place of meeting for 1923—Oklahoma City.

PENNSYLVANIA.

President, Harland J. Mentzer, Blue Ridge Summit.

First Vice-President, Croll Keller, Harrisburg.

Second Vice-President, Fred Schiller, Pittsburgh.

Secretary, Louis Saalbach, Pittsburgh.

Treasurer, F. H. E. Gleim, Lebanon.

The place of meeting for 1923—Bedford Springs, June 11.

UTAH.

President, Ed. Johnston, Mount Pleasant.

First Vice-President, D. Clark Watson, St. George.

Second Vice-President, Frank F. Ulrich, Morgan.

Secretary, Edwin C. Smith, Salt Lake.

Treasurer, E. E. Carr, Ogden.

The place of meeting for 1923—Provo.

WISCONSIN.

President, George Baldauf, Milwaukee.

First Vice-President, Jos. Wiesner, Beloit.
Second Vice-President, George Sontag, Neillsville.
Third Vice-President, A. J. Krygier, Milwaukee.
Secretary, E. G. Raeuber, Milwaukee.
Treasurer, H. Rollman, Chilton.

NATIONAL ASSOCIATION OF DRUG CLERKS.

President, H. J. Steining, La Fayette, Ind.
First Vice-President, James K. Wünsch, Chicago, Ill.
Second Vice-President, Arthur M. Truitt, Charleston, W. Va.
Third Vice-President, A. J. Dellande, Tiptonville, Tenn.
Fourth Vice-President, Otto E. Bruder, Chicago, Ill.
Secretary-Treasurer, Paul J. Mandabach, Chicago, Ill.

(*To be continued.*)

THE PHARMACIST AND THE LAW.

ALCOHOL MAY BE DENATURED TO MAKE TINCTURE OF ARNICA.

A new specially denatured alcohol formula, to be known as specially denatured alcohol formula No. 47, has been authorized for use in the manufacture of tincture of arnica and other liniments and lotions for external purposes. The formula follows:

To every 100 gallons of pure ethyl alcohol, add 7 gallons fluidextract of arnica flowers, National Formulary, third edition.

NARCOTIC LAW T. D. 3342 NOT EFFECTIVE UNTIL OCTOBER.

Treasury Decision 3362, relating to narcotic law and regulation, is revoked and the effective date of T. D. 3342 is changed from July 1 to October 1, 1922. The postponement ruling provides as follows:

The separate additional entries of all narcotic drugs in process of manufacture or repacking on July 1, 1922, will accordingly not be required in the return rendered for the month of July 1922, as stated in the second paragraph of Article 84 (Regulations 35, Revised), as revised by said decision, but there must be reported on line 1 of the summary, Form 810 of the return rendered for the month of October 1922, all narcotic drugs in process of manufacture or repacking on October 1, 1922.

Commissioner Blair also has promulgated Treasury Decision 3373, amending narcotic regulations 35, to require immediate reporting to the Commissioner of Internal Revenue the theft or loss of narcotic order forms. When entire books are stolen or lost and the serial numbers of the forms are unknown to the loser, the loss is to be reported to the Collector of Internal Revenue from whom the books were obtained.

FORMULA DISCLOSURE FOR DRUGS, PURPOSE IN GEORGIA BILLS.

Bills are pending in the Georgia Legislature which would require all manufacturers, venders, agents and other persons to place, by printed label or sticker, upon the outside of each bottle, box or package containing any drug, drugs, food, drink, drinks, or other articles for human use or consumption, the formula showing the ingredients making up or constituting the component parts of the drug or drugs, food, drink, drinks or other articles, with the amount or proportion of the ingredient used therein.

One of the measures is House Bill 692 by Representative Valentino, Savannah; the other is Senate Bill 225 by Senator Harrison, Blairsville. The bills have been referred respectively to the House Committee on Labor and the Senate Committee on Hygiene and Sanitation.

ALLEGED NARCOTIC LAW ABUSES.

Continuing his attacks upon the narcotic administration, Representative Volk, of New York, has inserted in the Congressional Record a lengthy extension of remarks in which he urges an investigation of narcotic drug addiction. Mr. Volk states in his remarks that the American Public Health Association indorses the suggested narcotic investigation and that the American Therapeutic Association blames chaotic conditions on the rulings of Prohibition Commissioner Haynes.

CARRIER PIGEONS SMUGGLE NARCOTICS INTO FRANCE.

The use of carrier pigeons as cocaine smugglers, "snow birds" in the literal sense of the word, is the latest device for introducing the drug from Germany into France. The pigeons are released from various points along the German frontier and alight in Nancy, each carrying quite appreciable amounts of the narcotic.

The greed of the smugglers in overloading one bird, which fell exhausted in the Meuse district, caused the undoing of the smugglers and the arrest of several of them. This pigeon

carried fifteen grams, or about half an ounce of the drug, in small packages sewed to the feathers of the bird and not tied to the leg, as is customary in the carrying of messages.

RUBBING ALCOHOL SALES LIMITED BY OFFICIAL ORDER.

Commissioner of Internal Revenue Blair has issued warning concerning sale and use of articles prepared with specially denatured alcohol. Collectors of Internal Revenue are requested by the commissioner to invite the attention of every manufacturer having a permit to procure and use specially denatured alcohol, prepared in accordance with any authorized formula, for the making of so-called "rubbing" or "bathing" alcohol for massage or other external purposes, "to the view of this office that sales of such products should be confined to persons legitimately engaged in the bona fide drug trade, or operating hospitals, sanitariums, Turkish bath establishments or other establishments where alcohol has customarily been used for massage or other external purposes."

Failure to confine such sales to such persons, or the making of sales to such persons in quantities in excess of their reasonable requirements, Commissioner Blair says, "will be regarded as indicating absence of good faith on the part of the vendor and as ground for cancellation of his permit as provided for by Article 115, Regulations 61."

ALCOHOL ORDERS IN FIFTEEN GALLON LOTS EXEMPTED FROM CONFIRMATION REQUIREMENTS.

T. D. 3357 MODIFIES PRO-CIRCULAR 100—ALL ORDERS MUST BE CONFIRMED WITHIN FORTY-EIGHT HOURS.

Treasury Decision 3357 has been promulgated. This decision modifies Pro-Circular 100 (printed in Bulletin No. 51 and referred to in Bulletin No. 52) in two important respects:

1. From now on alcohol in fifteen gallon lots or less is exempted from the confirmation requirements of Pro-Circular 100.

2. All quantity orders requiring confirmation must be acted upon by Prohibition Directors within forty-eight hours, thus obviating delays in deliveries of larger quantities.

BOOK NOTICES AND REVIEWS.

Vergleichende Anatomie der Cinnamomumrinden unter besonderer Berücksichtigung ihrer Entwicklungsgeschichte. Inaugural-Dissertation der hohen philosophischen Fakultät der Universität Basal zur Erlangung der Doktorwürde vorgelegt von Walter Birnstiel aus Basel und Lichtensteig.

Beautifully situated in the northern part of Switzerland on both shores of the Rhine is Basel, the old Roman Basilia (imperial residence) of Emporer Valentinian I. Its University dates back to Pope Pius II who founded it in 1460. Basel and its University became famous through Holbein, Erasmus and Paracelsus. The Pharmaceutical Institute of the University is under the able directorship of Professor Dr. Heinrich Zörnig, a practical apotheker, formerly custos at the Plant-physiological Institute in Munich, and also an honorary member of the American Pharmaceutical Association. Zörnig and his students are accomplishing excellent work, especially in the realm of pharmacognosy.

The Thesis before us is an example of the kind of research done in Basel. It is the work of Walter Rudolf Birnstiel who passed his state examination as apotheker in September, 1918, and then took a postgraduate course at the University under Professor Zörnig. Sixteen different species of cinnamon barks, procured from authentic sources, are described and treated macroscopically and microscopically. This comparative anatomy is a very valuable addition to the science. The thesis comprises 104 pages and includes a bibliography of 35 works which have been consulted. The usual "Curriculum Vitae" and 13 very excellent halftones of sections of different cinnamon barks help to make the thesis interesting and instructive.

The author, as well as his teacher, Prof. Zörnig, are to be complimented on this research work with which they have enriched the materia medica. It is also a credit to pharmacy that this work was done by an "Apotheker."

OTTO RAUBENHEIMER, PH.M.

Handbuch der Biologischen Arbeitsmethoden von Geh. Med. Rat. Prof. Dr. Emil Abderhalden, Director des Physiologischen Inst. Universtät Halle. Lief. 32—*Nachweis und Bestimmung der Gifte auf Chemischen Wege*, von Prof. Wilhelm Autenrieth, Freiburg. Lexicon, 420 pp. M. 468.

The name *Abderhalden*, an authority of international reputation on physiological chemistry is a guarantee for the success of this work

which comprises when completed 13 Divisions, each one of which is subdivided in parts, some as many as 10 parts. The book before us is No. 1 of part 7, of the 4th division: Applied chemical and physical methods.

Prof. Wilhelm Autenrieth of the University of Freiburg in Breisgau is well fitted to write a book on "Detection and Determination of Poisons by Chemical Means." No doubt many readers are acquainted with the author's little work or its English translation by Wm. H. Warren, "The Detection of Poisons and Strong Drugs." What the author then stated on some 200 pages is now amplified and augmented in 420 pages. It is a masterwork by a true master: Enough said!

OTTO RAUBENHEIMER, PH.M.

Arbeiten aus dem Pharmazeutischen Institut der Universität Berlin. Herausgegeben von Prof. Dr. H. Thoms, Geh. Regierungsrat, Direktor des Pharmazeutischen Institutes der Universität Berlin. XII Band Umfassend die Arbeiten der Kriegsjahre. Lexicon, 433 pp. 14 Textabbildungen, M. 540.

Volume XI of the *Arbeiten* was published in the fall of 1914. Owing to the world war the present volume was delayed until now.

The work is divided into six parts as follows: *I*, Inorganic and Organic Chemistry; *II*, Examination of Drugs and Poisons; *III*, Drug Plant Cultivation; *IV*, Examination of Foods and Technical Products; *V*, Lectures, and *VI*, Apparatus. The many articles are highly interesting and instructive but limited space forbids us to enter into details. However, we must not forget to mention the simple test to distinguish between methyl and ethyl alcohol by Th. Sabalitschka on pp. 260–263. If about 0.1 Gm. of powdered crystallized copper sulphate is shaken with 2 cc pure methyl alcohol a blue-green color will be developed, which will not appear with ethyl alcohol. Verily a very simple test.

We congratulate Prof. Thoms and his coworkers at the Pharmaceutical Institute of Berlin for the publication of Vol. *XII* of the Arbeiten and we hereby recommend this work to all scientific pharmacists and chemists.

OTTO RAUBENHEIMER, PH.M.

PUBLICATIONS RECEIVED.

New and Nonofficial Remedies, 1922, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1922. Pp. 418 + xxxiv. Chicago: American Medical Association, 1922.

"New and Nonofficial Remedies" contains descriptions of proprietary medicines which are offered to members of the American medical profession. These descriptions are critical and trustworthy. They are based in part on investigations made by, or under the direction of, the Council on Pharmacy and Chemistry and in part on information supported by evidence submitted by the manufacturer or his agent.

A feature of the book which is of especially practical value is the grouping of preparations in classes. Each of these is introduced by a general discussion of the group. Thus the iodine preparations, the arsenic preparations, the animal organ preparations, the biologic products, etc., each are preceded by a general, thoroughly up-to-date discussion of the particular group.

The general articles are revised when necessary; attention is called this time to those on silver preparations and tannin preparations, and also to the article on Pollen and Epidermal Extract Preparations and Biologically Reactive Food Proteins. The revision of "New and Nonofficial Remedies" is annually looked for by pharmacists as a necessary reference book.

Opiate Addiction. Its handling and treatment. By Edward Huntington Williams, M.D. Formerly Associate Professor of Pathology, State University of Iowa; Associate Editor of the Encyclopedia Britannica (Tenth Edition); Assistant Physician, New York State Hospital System; Special Lecturer on Criminology and Mental Hygiene, State University of California, etc. Price $1.75.

The author states that, "perhaps, the best practical solution of the whole narcotic problem would be to place it unreservedly in the hands of the United States Public Health service. This would bring it under control of intelligent physicians who also have legal authority to enforce any clinical or custodial measures that seem necessary, and facilities to work out its laboratory and clinical problems without hindrance." We agree that narcotic laws should not be tax measures.

He makes the statement that the consensus of opinion, of those most closely in touch with the situation, is that the number of drug takers and the amount of narcotics consumed to-day is just as great as or greater than when the Harrison Act was passed.

No statistics are given, probably because the book is devoted chiefly to treatment of

addicts. The author views drug addiction as a disease, that the addicts in most instances present an abnormal mental and physical condition closely akin in many respects to the condition known as insanity.

Unfortunately, there are professional (?) men who will lend themselves to making addicts and supplying those who have formed the habit. Also institutions have exhibited selfish motives along with professional skill. These remarks are made to emphasize the need of regulations to control and ferret out the very few and, unfortunately, this inconveniences the large majority of law-abiding professional men who would protect society, even if there were no law.

Dr. Williams has the situation sized up rightly when he states that most of the narcotics are distributed by peddlers and back of them stand other criminals who scheme to secure the narcotics.

The claim that "patent medicines" induced drug addiction is no longer tenable, for these do not now contain narcotics, at least, very few of them; the manufacturers of "patent medicines" are most observant in keeping out preparations containing narcotics.

We are not in position to discuss the methods of treatment presented by the author; however, the book has been carefully prepared; his views indicate familiarity with his subject and he presents a working basis for the sensible handling of cases of drug addiction.

The National Geographic Magazine for July is of particular interest to pharmacists because of 16 pages in exquisite color illustrations of midsummer wild flowers; 9 type pages accompany the illustrations, giving description, habitat, etc.

American Research Chemicals, First Revision. Reprint and Circular Series of the National Research Council. This has been compiled for the Committee on Research Chemicals and Research Information Service by Clarence C. West of the National Research Council. The price of this monograph is 50 cents.

Proceedings of the Forty-Third Annual Meeting of the Missouri Pharmaceutical Association held at Excelsior Springs, June 14, 15, 16 and 17, 1921, contains also Constitution and Roll of Members.

Proceedings of the Forty-Second Annual Meeting of the North Carolina Pharmaceutical Association held in the Selwyn Hotel, Charlotte, N. C., June 21, 22, 23, 1921; also the Roll of Members, report of the secretary-treasurer, North Carolina Board of Pharmacy, together with list of registered pharmacists; also the members of the traveling men's auxiliary.

Bulletin of Purdue University, April 1922. Circular of information concerning the school of pharmacy, 1922–1923.

NEW PUBLICATIONS.

Theories of Organic Chemistry. By Dr. Ferdinand Henrich. Translated and enlarged from the revised fourth German edition of 1921, by Treat B. Johnson, Professor of Organic Chemistry, Yale University, and Dorothy A. Hahn, Professor of Organic Chemistry, Mount Holyoke College. Price $6.00.

Laboratory Manual of Colloid Chemistry. By Harry N. Holmes, Ph.D., Professor of Chemistry, Oberlin College. Price, $2.00.

Précis de Pharmacie Galénique.—Par E. Gerard. Troisiéme Edition. Pp. iv. + 550. Price 15 frs. Paris: A. Maloine et Fils. 1922.

A Dictionary of Applied Chemistry.—By Sir Edward Thorpe, C.B., LL.D., F. R. S. Vol. III. Revised and enlarged edition. Pp. viii + 735. Price 60s. net. London: Longmans, Green and Co. 1922.

Chemistry of Essential Oils and Artificial Perfumes. Ernest J. Parry. Vol. II, 4th edition, revised and enlarged. 366 pp. Price, 22s. Scott, Greenwood & Son, London.

Chemistry of the Non-benzenoid Hydrocarbons. Benjamin T. Brooks. 612 pp. Price, $7.00. The Chemical Catalog Co., Inc., New York.

Chemistry: Chimie Élementaire. E. Péchard. 468 pp. Illustrated. Price, 12 fr. 50. Dunod, Paris.

Colloids: Beiträge zu einer Kolloidchemie des Lebens. Raphael Ed. Liesegang. 39 pp. Illustrated. Price, 10 mk. Th. Steinkopff, Dresden and Leipzig.

Ink: Praktische Handbuch der Tintenfabrikation. Louis Edgar Andés. 223 pp. Price, 36 mk. A. Hartleben, Wien and Leipzig.

Ink: Die Tinten-Fabrikation. Sigmund Lehner. 224 pp. Price, 36 mk. A. Hartleben, Wien and Leipzig.

Inorganic Chemistry. T. Martin Lowry. 943 pp. Illustrated. Price, $9.00. The Macmillan Company, New York.

Qualitative Analysis: Anleitung zum Studium der Chemischen Reaktionen und der Qualitativen Analyse. Friedrich Fichter. 120 pp. Price, 33 mk. F. Enke, Stuttgart.

Soap: Nouveau Traité Théorique et Pratique de Savonnerie. J. Fritsch. 580 pp. Illustrated. Price, 48 fr. Dunod, Paris.

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